FUJITSU

SPARC Enterprise
M8000/M9000 Servers

Service Manual

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FUJITSU

SPARC Enterprise™ M8000/M9000 Servers Service Manual

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Preface

This manual a maintenance manual for the SPARC Enterprise™ M8000/M9000 servers. The manual explains basic operations and detailed replacement procedures for field-replaceable units (FRUs), which are components that can be replaced at the customer's site.

As a rule, Fujitsu certified service engineers on the SPARC Enterprise M8000/M9000 servers. However, another person such as the system administrator may perform some of the simple work, under the direction of one of the service engineers. This manual is intended for the service engineers and other persons described above.

Notes precede the chapters, sections, and paragraphs that cover the work that only Fujitsu-certified service engineers are allowed to perform. Follow instructions for all work.

This section explains:

- "Glossary" on page xvii
- "Structure and Contents of This Manual" on page xviii
- "SPARC Enterprise M8000/M9000 Servers Documentation" on page xxi
- "Product Handling" on page xxiv
- "Limitations and Cautions" on page xxvi
- "Fujitsu Welcomes Your Comments" on page xxvii

Glossary

For the terms used in the "SPARC Enterprise M8000/M9000 Servers Documentation" on page xxi, refer to the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers Glossary.*

Structure and Contents of This Manual

This manual is organized as described below:

- PART I Basic Information for Maintenance and Troubleshooting

  Provides notes on handling the SPARC Enterprise servers and rules about operation and descriptions, and it also describes the required tools for maintenance.

- Chapter 1 Safety and Tools:

  Provides notes on handling the SPARC Enterprise servers and rules about operation and descriptions, and it describes the required tools for maintenance.

- Chapter 2 Product Overview and Troubleshooting:

  Provides information that is required in troubleshooting.

- Chapter 3 Periodic Maintenance:

  Explains the maintenance work that must be performed regularly regardless of whether a problem has occurred. The actual work is limited to preventing dust in the environment from creating pollution.

- Chapter 4 FRU Removal Preparation:

  Explains the required basic operations for replacing components.

- PART II Maintenance

  Explains how to remove and replace FRUs.

- Chapter 5 Internal Components Access:

  Explains how to access each part of the system.

- Chapter 6 Replacement of CPU/Memory Board Unit (CMU), CPU, and DIMM:

  Explains how to replace each storage device.

- Chapter 7 I/O Unit (IOU) Replacement:

  Explains the replacement procedures for an I/O unit (IOU).

- Chapter 8 FAN Unit Replacement:

  Explains the replacement procedures for a fan unit.

- Chapter 9 Power Supply Unit (PSU) Replacement:

  Explains the replacement procedures for a power supply unit (PSU).
- Chapter 10 Operator Panel Replacement:

  Explains the replacement procedures for the operator panel.
- Chapter 11 XSCF Unit Replacement:

  Explains the replacement procedures for an XSCF unit.
- Chapter 12 Hard Disk Drive (HDD) Replacement:

  Explains the replacement procedures for a hard disk drive (HDD).
- Chapter 13 PCI Slot Device Replacement:

  Explains the replacement procedures for a device mounted in a PCI slot of an IOU.
- Chapter 14 CD-RW/DVD-RW Drive Unit Replacement:

  Explains the replacement procedures for the CD-RW/DVD-RW drive unit.
- Chapter 15 Tape Drive Unit Replacement:

  Explains the replacement procedures for the tape drive unit.
- Chapter 16 Clock Control Unit Replacement:

  Explains the replacement procedure for the clock control unit.
- Chapter 17 Crossbar Unit Replacement:

  Explains the replacement procedure for a crossbar unit.
- Chapter 18 AC Section Replacement:

  Explains the replacement procedures for a fan unit.
- Chapter 19 DDC Replacement:

  Explains the replacement procedure for the DDC.
- Chapter 20 Backplane Replacement:

  Explains the replacement procedure for a backplane.
- Chapter 21 Sensor Unit Replacement:

  Explains the replacement procedure for the sensor unit.
- Chapter 22 Media Backplane Replacement:

  Explains the replacement procedure for the media backplane.
- Chapter 23 Switch Backplane Replacement:

  Explains the replacement procedure for the switch backplane.

- Chapter 24 Addition and Deletion of a Rack-mountable Dual Power Feed Option, Power Cabinet, and M9000 Expansion Cabinet:

  Explains the replacement procedures for rack-mountable dual power feed(RDPF).

- Chapter 25 Addition and Deletion of CMU, DIMM, IOU, HDD, PCI Cards and TAPEU:

  Explains the procedures for adding a unit to the SPARC Enterprise M8000/M9000 servers and deleting a unit from the SPARC Enterprise M8000/M9000 servers.

- Appendix A System Configuration:

  Describes the installation conditions and configuration of the SPARC Enterprise server.

- Appendix B Components:

  Provides figures showing the components that compose the SPARC Enterprise servers.

- Appendix C External Interface Specifications:

  Describes the specifications of the connectors provided on the SPARC Enterprise server unit.

- Appendix D UPS Controller:

  Describes the connection of UPC interface, which controls UPS (Uninterruptible Power Supply).

- Appendix E XSCF Unit Replacement When XCP 1040 or 1041 Is in the Server:

  Provides a replacement procedure to use when the server uses an older version of XCP firmware than is present in the replacement XSCFU.

- Abbreviations

  Provides the full spellings of abbreviations used in this manual.

- Index

  Provides keywords and corresponding reference page numbers so that the reader can easily search for items in this manual as necessary.

SPARC Enterprise M8000/M9000 Servers Documentation

The manuals listed below are provided for reference.

Book Titles	Manual Codes
SPARC Enterprise M8000/M9000 Servers Site Planning Guide	C120-H014
SPARC Enterprise Equipment Rack Mounting Guide	C120-H016
SPARC Enterprise M8000/M9000 Servers Getting Started Guide	C120-E323
SPARC Enterprise M8000/M9000 Servers Overview Guide	C120-E324
Important Safety Information for Hardware Systems	C120-E391
SPARC Enterprise M8000/M9000 Servers Safety and Compliance Guide	C120-E326
External I/O Expansion Unit Safety and Compliance Guide	C120-E457
SPARC Enterprise M8000/M9000 Servers Unpacking Guide	C120-E327
SPARC Enterprise M8000/M9000 Servers Installation Guide	C120-E328
SPARC Enterprise M8000/M9000 Servers Service Manual	C120-E330
External I/O Expansion Unit Installation and Service Manual	C120-E329
SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers RCI Build Procedure	C120-E361
SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers Administration Guide	C120-E331
SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide	C120-E332
SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual	Go to the Web
SPARC Enterprise M4000/M5000/M8000/M9000 Servers Dynamic Reconfiguration (DR) User's Guide	C120-E335
SPARC Enterprise M4000/M5000/M8000/M9000 Servers Capacity on Demand (COD) User's Guide	C120-E336
SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers RCI User's Guide	C120-E360
SPARC Enterprise M8000/M9000 Servers Product Notes	Go to the Web

Book Titles	Manual Codes
External I/O Expansion Unit Product Notes	C120-E456
SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers Glossary	C120-E514
SPARC Enterprise /PRIMEQUEST Common Installation Planning Manual	C120-H007

1. Manuals on the Web

   The latest versions of all the SPARC Enterprise Series manuals are available at the following websites.

   Global Site

   http://www.fujitsu.com/sparcenterprise/manual/

   Japanese Site

   http://primeserver.fujitsu.com/sparcenterprise/manual/

Note – Product Notes are available on the website only. Please check for the most recent update on your product.

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2. Documentation CD

   For the Documentation CD, please contact your local sales representative.

   - SPARC Enterprise M8000/M9000 Servers Documentation CD (C120-E364)

3. Manual on the Enhanced Support Facility x.x CD-ROM disk

   - Remote maintenance service

Book Title	Manual Code
Enhanced Support Facility User's Guide for REMCS	C112-B067

4. Manual (man page) provided in the system

   XSCF man page

Note – The man page can be referenced on the XSCF Shell, and it provides the same content as the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*.

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5. Sun Microsystems Software (for Solaris OS, etc.) Related Manuals

   http://docs.sun.com

6. Information on Using the RCI function

   This manual does not contain an explanation of the RCI build procedure. For information on using the RCI function, refer to the *RCI Build Procedure* and *RCI User's Guide* provided on the website.

Product Handling

Maintenance

Caution – Certain tasks in this manual should only be performed by a certified service engineer. User must not perform these tasks. Incorrect operation of these tasks may cause electric shock, injury, or fire.

- Installation and reinstallation of all components, and initial settings
- Removal of front, rear, or side covers
- Mounting/de-mounting of optional internal devices
- Plugging or unplugging of external interface cards
- Maintenance and inspections (repairing, and regular diagnosis and maintenance)

Caution – The following tasks regarding this product and the optional products provided from Fujitsu should only be performed by a certified service engineer. Users must not perform these tasks. Incorrect operation of these tasks may cause malfunction.

- Unpacking optional adapters and such packages delivered to the users
- Plugging or unplugging of external interface cards

Remodeling/Rebuilding

Caution – Any modification and/or recycling of this product and its components may be carried out only by a certified service engineer and must not be done by the customer under any circumstances. Otherwise, electric shock, injury or fire may result.

Emission of Laser Beam (Invisible)

Caution – The main unit and high-speed optical interconnect cabinet contain modules that generate invisible laser radiation. Laser beams are generated while the equipment is operating, even if an optical cable is disconnected or a cover is removed. Do not look at any light-emitting part directly or through an optical apparatus (e.g., magnifying glass, microscope).

Limitations and Cautions

Power Control and Operator Panel Mode Switch

When you use the remote power control utilizing the RCI function or the automatic power control system (referred to below as APCS), you can disable this remote power control or the APCS by switching to Service mode on the operator panel.

Disabling these features ensures that you do not unintentionally switch the system power on or off during maintenance. Note system power off with the APCS cannot be disabled with the mode switch. Therefore, be sure to turn off automatic power control via APCS before starting maintenance.

If you switch the mode while using the RCI or the automatic power control, the system power is controlled as follows.

Function	Mode switch	
	Locked	Service
RCI	Remote power-on/power-off operations are enabled.	Remote power-on/power-off operations are disabled.
Automatic power control	Automatic power-on/power-off operations are enabled.	Automatic power-on is disabled, but power-off remains enabled.

To use the RCI function, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers RCI Build Procedure* and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers RCI User's Guide* which are available on the website of manuals.

To use the APCS, see the *Enhanced Support Facility User's Guide for Machine Administration Automatic Power Control Function (Supplement Edition)*.

Fujitsu Welcomes Your Comments

If you have any comments or requests regarding this document, or if you find any unclear statements in the document, please state your points specifically on the form at the following URL.

For Users in U.S.A., Canada, and Mexico:

http://www.computers.us.fujitsu.com/www/support_servers.shtml?support/servers

For Users in Other Countries:

SPARC Enterprise contact

http://www.fujitsu.com/global/contact/computing/sparce_index.html

PART I Basic Information for Maintenance and Troubleshooting

Part I provides maintenance information, explains methods of problem analysis, troubleshooting, and basic operations for replacing FRUs.

CHAPTER 1

Safety and Tools

This chapter provides notes on handling the high-end server descriptions and rules about operation, and it lists the tools required for maintenance.

This information is explained in the following sections:

- Section 1.1, “Symbols” on page 1-1
- Section 1.2, “Precautions” on page 1-4
- Section 1.3, “Tools Required for Maintenance” on page 1-5
- Section 1.4, “Antistatic Precautions” on page 1-6

1.1 Symbols

1.1.1 Text Conventions

This manual uses the following fonts and symbols to express specific types of information.

Fonts/symbols	Meaning	Example
AaBbCc123	What you type, when contrasted with on-screen computer output. This font represents the example of command input in the frame.	XSCF> **adduser jsmith**

Fonts/symbols	Meaning	Example
AaBbCc123	The names of commands, files, and directories; on-screen computer output. This font represents the example of command input in the frame.	XSCF> **showuser -P** User Name: jsmith Privileges: useradm auditadm
Italic	Indicates the name of a reference manual.	See the *SPARC Enterprise M3000/M4000/M5000/M8000/M 9000 Servers XSCF User's Guide* .
" "	Indicates names of chapters, sections, items, buttons, or menus.	See Chapter 2, "Product Overview and Troubleshooting."

1.1.2 Prompt Notations

The following prompt notations are used in this manual.

Shell	Prompt Notations
XSCF	XSCF>
C shell	machine-name%
C shell super user	machine-name#
Bourne shell and Korn shell	$
Bourne shell and Korn shell super user	#
OpenBoot™ PROM	ok

1.1.2.1 Command syntax

The command syntax is as follows:

- A variable that requires input of a value is enclosed in <>.
- An optional element is enclosed in [ ].
- A group of options for an optional keyword is enclosed in [ ] and delimited by |.
- A group of options for a mandatory keyword is enclosed in {} and delimited by |.
- The command syntax is shown in a box.

Example:

```
XSCF> showuser -a
```

1.1.3 Environmental Requirements for Using This Product

This product is a computer that is intended to be used in a computer room. For details on the operational environment, see the *SPARC Enterprise M8000/M9000 Servers Site Planning Guide*.

1.1.4 Conventions for Alert Messages

This manual uses the following conventions to show alert messages, which are intended to prevent injury to the user or bystanders as well as property damage, and important messages that are useful to the user.

WARNING	This indicates a hazardous situation that could result in death or serious personal injury (potential hazard) if the user does not perform the procedure correctly.
CAUTION	This indicates a hazardous situation that could result in minor or moderate personal injury if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property may occur if the user does not perform the procedure correctly.
IMPORTANT	This indicates information that could help the user to use the product more effectively.

1.1.4.1 Alert Messages in the Text

An alert message in the text consists of a signal indicating an alert level followed by an alert statement. Alert messages are indented to distinguish them from regular text as shown in the following example. Also, a space of one line precedes and follows an alert statement.

WARNING

The tasks listed below for this product and optional product provided by Fujitsu should be performed only by authorized service personnel.
The user must not perform these tasks. Incorrect operation of these tasks may cause electric shock, injury, or fire.

- Installation and reinstallation of all components
- Removal of front, rear, or side covers
- Mounting/unmounting of optional internal devices
- Connecting/disconnecting of external interface cables
- Maintenance (repair and regular diagnosis and maintenance)

1.2 Precautions

The following notes must be observed in maintenance work:

1.2.1 Operating Environment of the Product

Use the SPARC Enterprise in the correct operating environment. The SPARC Enterprise are assumed to be used in a computer room. For details of the operating environment, see the *SPARC Enterprise M8000/M9000 Servers Site Planning Guide*.

1.2.2 Maintenance

WARNING

The work listed below is to be performed by authorized service engineers. Persons who are not authorized service engineers must not perform the work. Otherwise, electric shock, injury, or fire may result.

- Installation, transport, and initial setup of each device
- Removal of the front, rear, or a side cover.
- Mounting or removing internal optional components
- Connecting or disconnecting an external interface cable
- Maintenance (repair, regular diagnosis, and maintenance)

CAUTION

The work listed below is to be performed by authorized service engineers. Persons who are not authorized service engineers must not perform the work. Otherwise, an equipment failure may result.

- Unpacking or installing products, such as an optional adapter, that are delivered to the customer
- Connecting or disconnecting an external interface cable

1.2.3 Conversion and Reuse of This Product

CAUTION

If this product is converted or a used article of this product is overhauled for the purpose of reuse, unexpected injury on users and bystanders or damage to their property may result.

1.3 Tools Required for Maintenance

The maintenance work described in Chapter 6 to Chapter 24 requires maintenance software to confirm that the SPARC Enterprise and other components are operating correctly and to collect status information and log data about the server and components. The work for mounting, removing, or replacing a specific component requires screwdrivers, and special tools such as an antistatic wrist strap. These items are listed in TABLE 1-1.

TABLE 1-1 Maintenance Tools

No.	Name	Use
1	Torque wrench [8.24 N*m (84 kgf*cm)]	Used to fix the bus bars of the power cabinet.
2	Sockets for 10 mm (M6) torque wrench	Used to replace the BP_A in the SPARC Enterprise M8000 server.
3	Sockets for 13 mm (M8) torque wrench	Used to fix the bus bars of the power cabinet.
4	Torque wrench extension	
5	Torque screwdriver [0.2 N*m (2.0 kgf*cm)]	Used to secure the clock cables between the cabinets if the expansion cabinet of the SPARC Enterprise M9000 server is mounted.
6	Slotted bit	Used to secure the clock cables between the cabinets if the expansion cabinet of the SPARC Enterprise M9000 server is mounted.
7	Wrist strap	For antistatic purposes
8	Conductive mat	For antistatic purposes
9	CPU module replacement tool	For mounting and removing CPU Modules (accessory)
10	SunVTS	Test program

Caution – Be sure to wear an antistatic wrist strap when handling components. Place removed components on an antistatic mat. Failure to do so may result in serious damage or injury.

1.4 Antistatic Precautions

During normal operations, all components mounted in the server, including the dummy (filler) units, are properly grounded through the chassis.

Prior to performing maintenance, ensure that any static electricity is discharged from the FRUs to be inserted and the person performing the maintenance. Both must be properly grounded.

Ensure that the procedures below are followed for proper grounding.

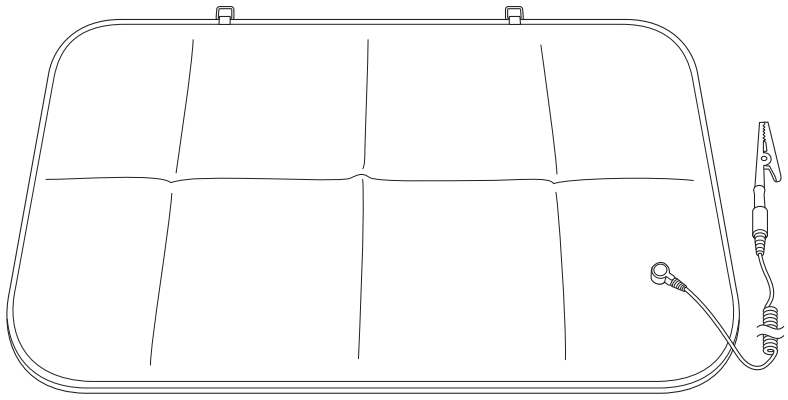
1.4.1 Removing Static Electricity

This section provides the information about removing static electricity.

1. **Connect the earth conductor of the antistatic mat to the server grounding port. (See** FIGURE 1-7 **to** FIGURE 1-10**)**

Note – Do not use antistatic bags or packaging materials in place of a grounded antistatic mat when handling the FRUs.

FIGURE 1-1 Conductive Mat



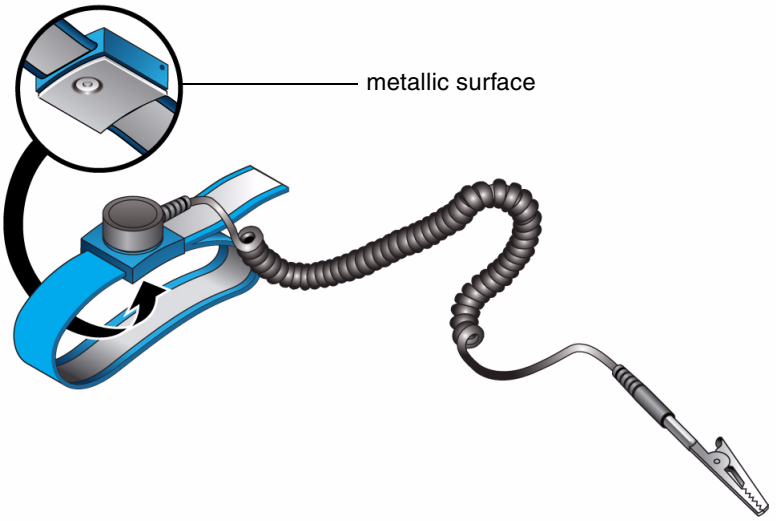
2. **Connect an antistatic wrist strap clip to a server grounding port. See** Section 1.4.2, “Grounding Port Connection Locations” on page 1-11**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

3. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin.**

   The wrist strap should be snug around the wrist so that it does not rotate.

FIGURE 1-2 Antistatic Wrist Strap Showing the Metallic Underside



1.4.1.1 Removing Static Electricity on a CMU and an IOU

1. **Prior to mounting a new CMU or IOU, place it on the grounded antistatic mat.**

2. **Touch the metallic chassis for 5 or more seconds with your bare hand wearing the antistatic wrist strap. (See FIGURE 1-3 or FIGURE 1-4)**

   You cannot remove static electricity by touching the label.

FIGURE 1-3 Metallic Chassis (CMU)

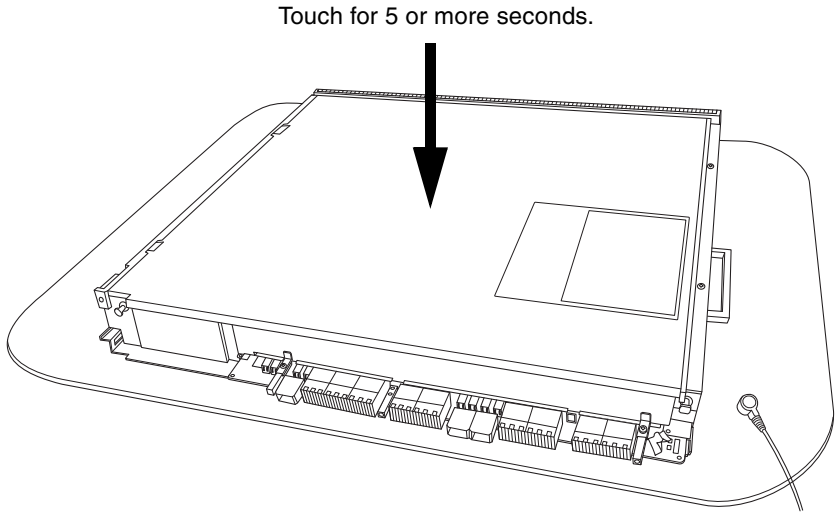
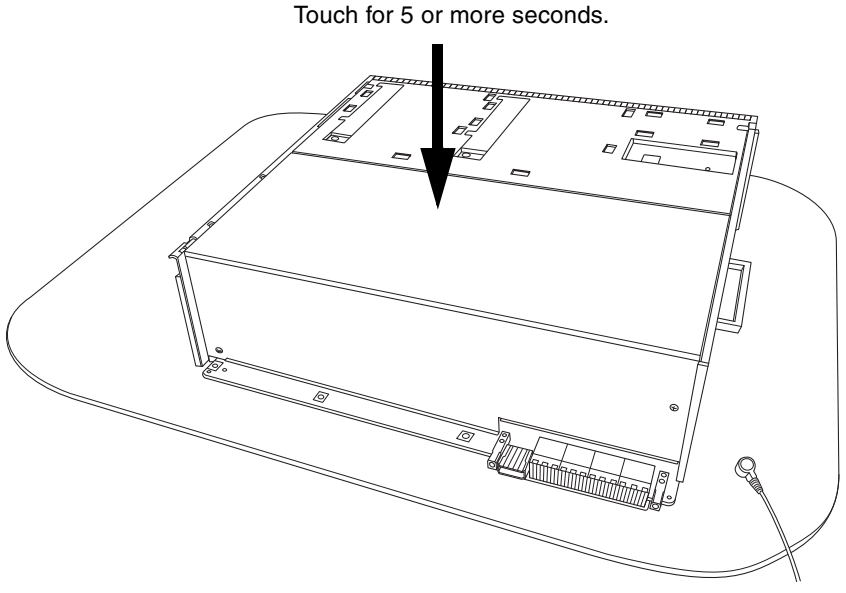


FIGURE 1-4 Metallic Chassis (IOU)



3. **Touch each of the designated points on the guide blocks for 5 or more seconds with your bare hand wearing the antistatic wrist strap. (See** FIGURE 1-5 **or** FIGURE 1-6**)**

FIGURE 1-5 Guide Block (CMU)

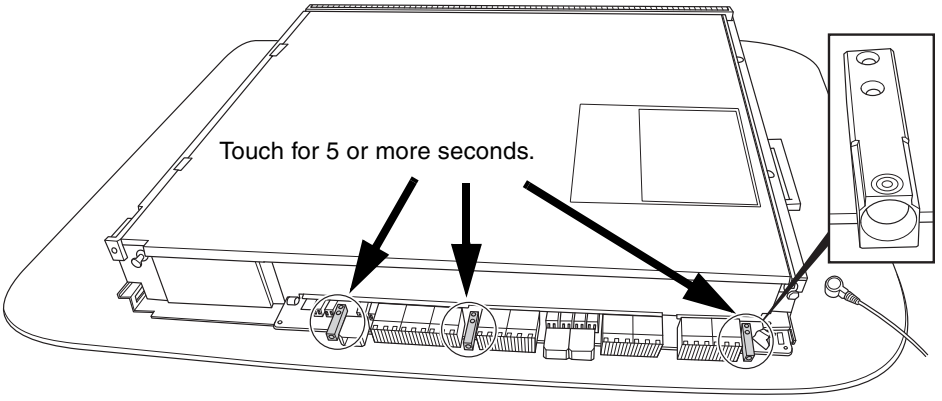
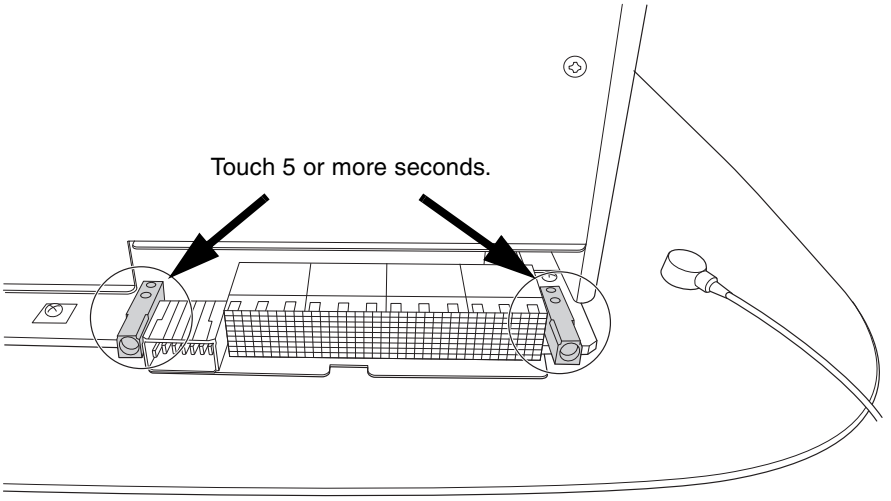


FIGURE 1-6 Guide Block (IOU)



1.4.2 Grounding Port Connection Locations

FIGURE 1-7 to FIGURE 1-10 show the locations of the grounding port on each server.

The grounding port can be used for the grounding of the antistatic wrist strap and the antistatic mat.

If the type of clip does not securely fit the grounding port, it can also be connected to the grounding wire for the door. For details, see Section 5.3, "How to Remove a Door" on page 5-3.

FIGURE 1-7 M8000 Grounding Port Connection Locations for the Wrist Strap Clip and the Antistatic Mat (Front View)

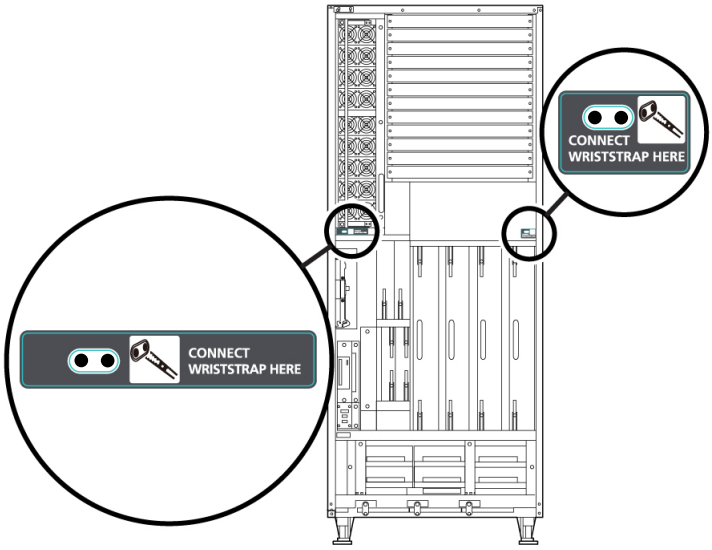


FIGURE 1-8 M8000 Grounding Port Connection Locations for the Wrist Strap Clip and the Antistatic Mat (Rear View)

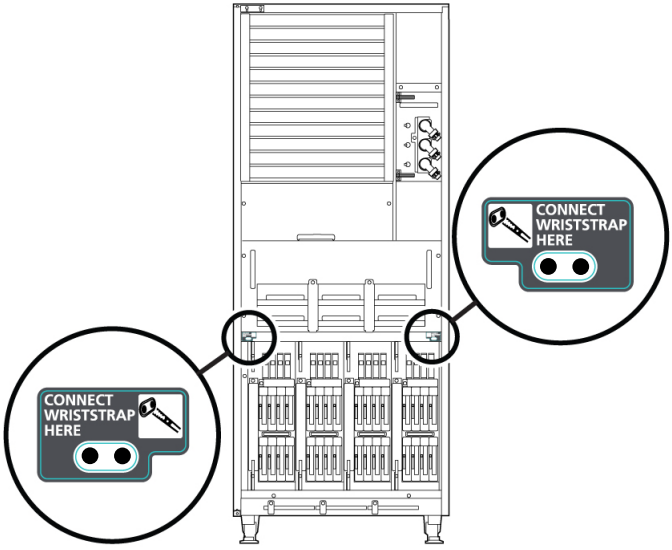


FIGURE 1-9 M9000 Grounding Port Connection Locations for the Wrist Strap Clip and the Antistatic Mat (Front View)

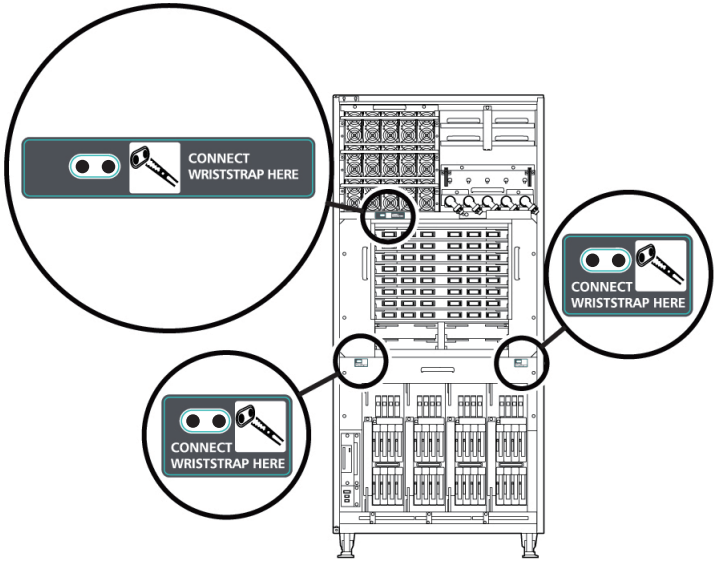
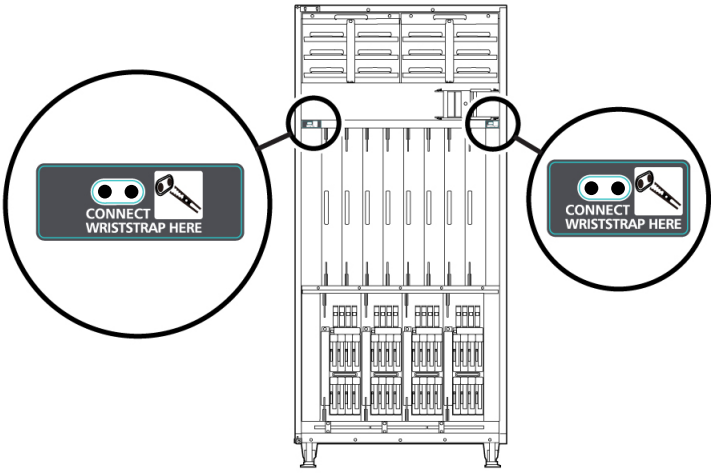


FIGURE 1-10 M9000 Grounding Port Connection Locations for the Wrist Strap Clip and the Antistatic Mat (Rear View)



CHAPTER 2

Product Overview and Troubleshooting

This chapter provides information that is required in troubleshooting.

This information is explained in the following sections:

- Section 2.1, “System Views” on page 2-1
- Section 2.2, “Labels” on page 2-11
- Section 2.3, “Operator Panel” on page 2-16
- Section 2.4, “Determining Which Diagnostics Methods To Use” on page 2-21
- Section 2.5, “Checking the Server and System Configuration” on page 2-23
- Section 2.6, “Error Conditions” on page 2-26
- Section 2.7, “LED Error Display” on page 2-30
- Section 2.8, “Using the Troubleshooting Commands” on page 2-34
- Section 2.9, “Traditional Solaris Troubleshooting Commands” on page 2-37

2.1 System Views

This section provides views of the high-end server. The figures can be used to locate the component in the server to be subjected to maintenance.

In terms of its structure, the high-end server consists of a cabinet that includes various mounted components and a front door, rear door, and side covers that protect the mounted components. The side covers are removed when cabinets are connected to each other or when the dual power feed option is connected to the cabinet. The operator panel, which is mounted on the front door, is always accessible. Each door can be locked with a key so that only the administrator can open it.

The front and rear views of FIGURE 2-1, FIGURE 2-2, FIGURE 2-4, FIGURE 2-5, FIGURE 2-7, and FIGURE 2-8 include names and abbreviations for field-replaceable units (FRUs). Components that are mounted inside the system are shown FIGURE 2-3, FIGURE 2-6, and FIGURE 2-9. The abbreviations are used in messages and the like. If multiple FRUs of the same type are mounted, the number sign # and a sequential number is added to their names to distinguish them from one another. Owing to the reduced scale, certain components (FRUs) are difficult to show in the figures. Accordingly, the layout of these components as viewed from one side is indicated in the table connected by a lead line to the component location.

2.1.1 SPARC Enterprise M8000 Server

FIGURE 2-1 Front View - M8000

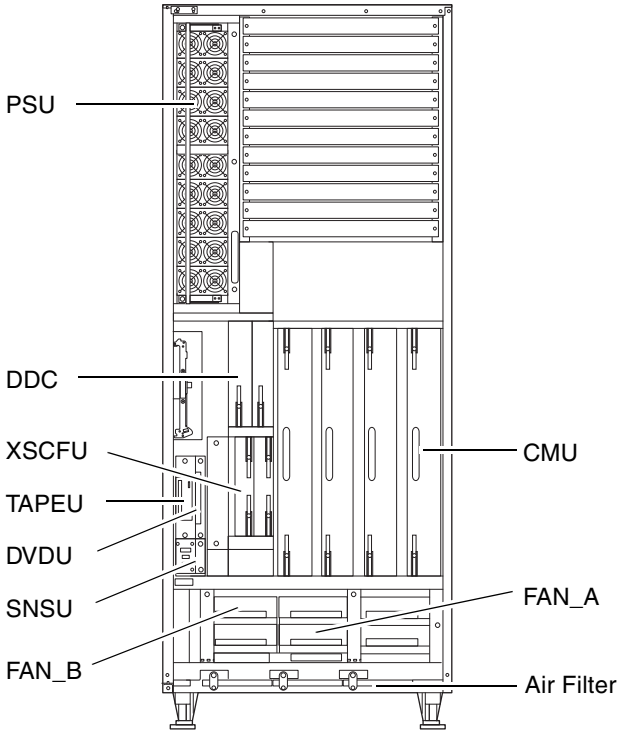


FIGURE 2-2 Rear View - M8000

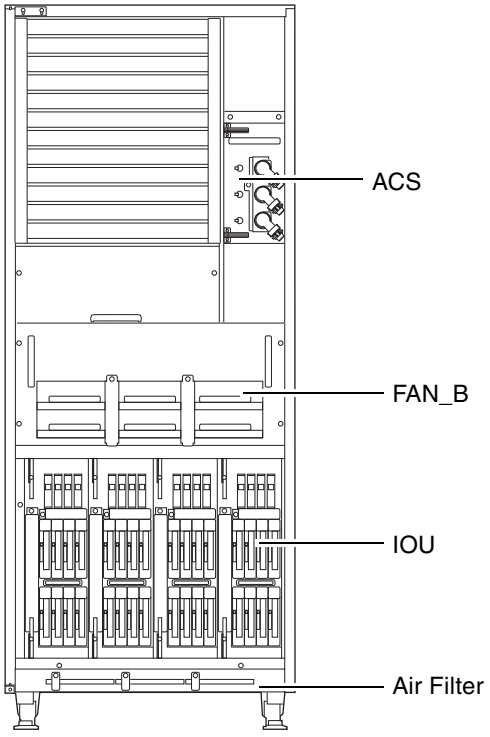
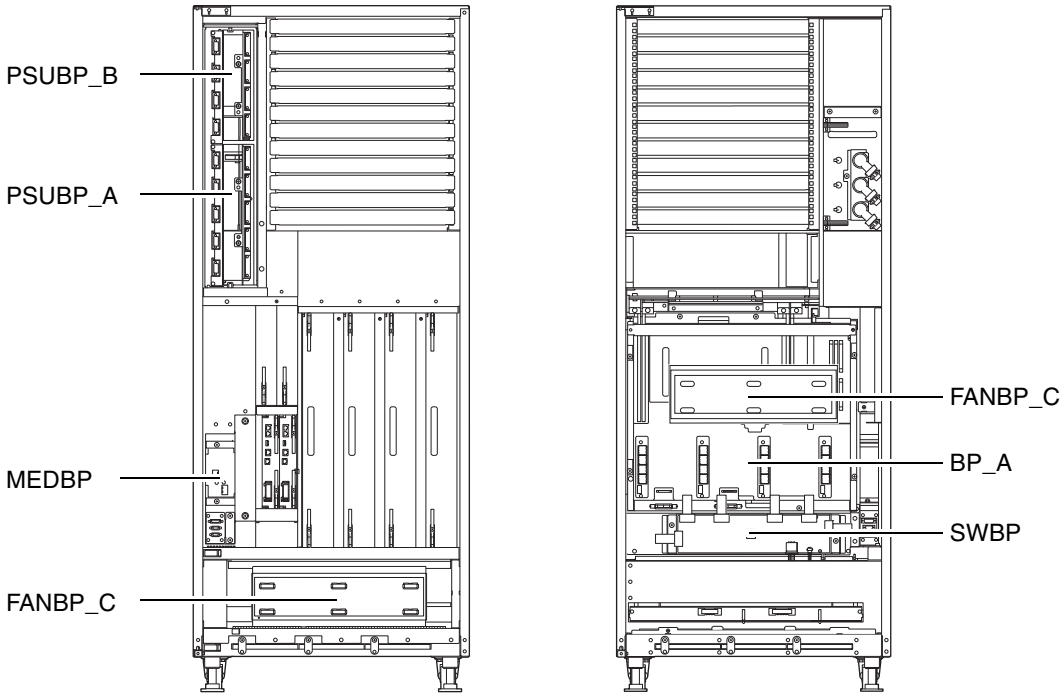


FIGURE 2-3 Internal View - M8000



2.1.2 SPARC Enterprise M9000 Server (Base Cabinet)

FIGURE 2-4 Front View - M9000 (Base Cabinet)

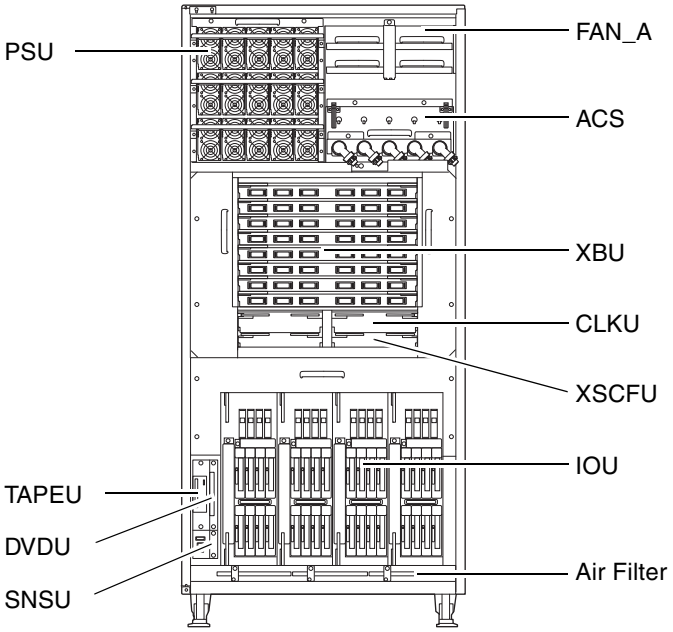


FIGURE 2-5 Rear View - M9000 (Base Cabinet)

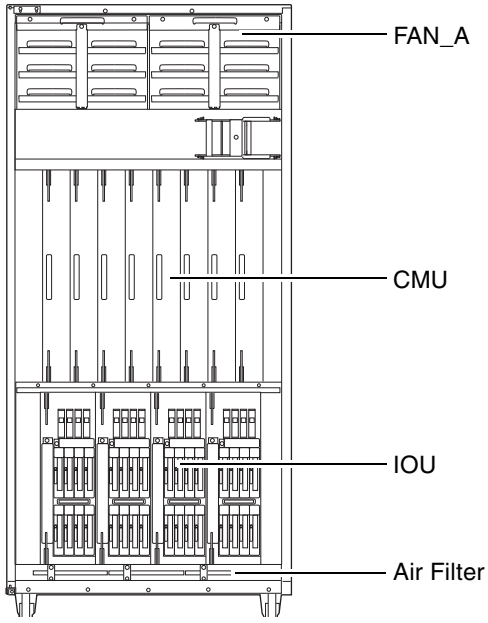
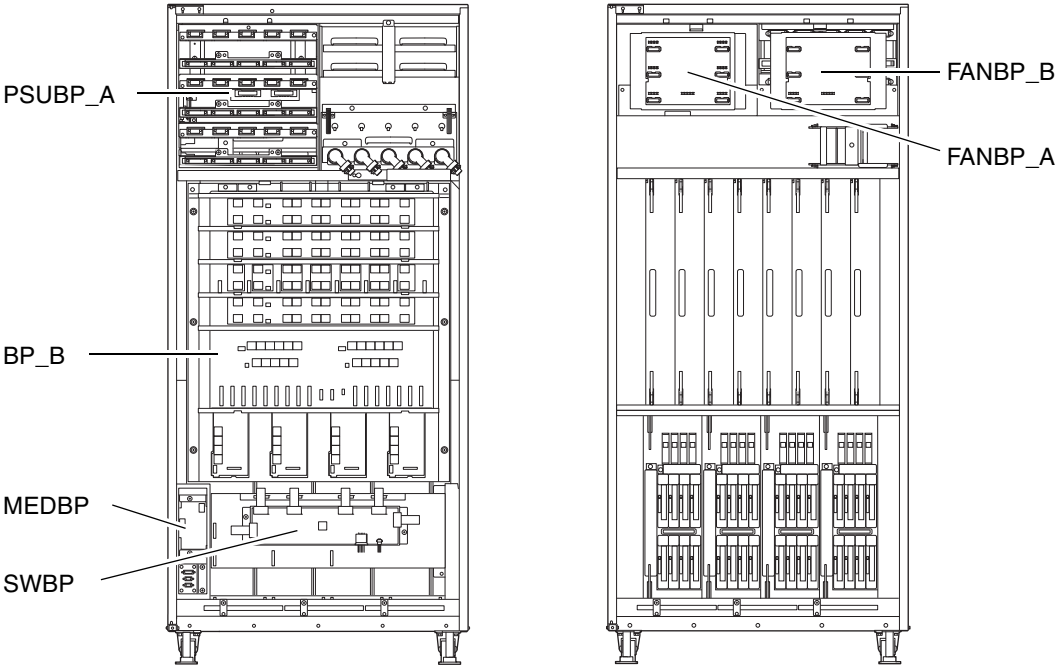


FIGURE 2-6 Internal View - M9000 (Base Cabinet)



2.1.3 SPARC Enterprise M9000 Server (Expansion Cabinet)

FIGURE 2-7 Front View - M9000 (with the Expansion Cabinet)

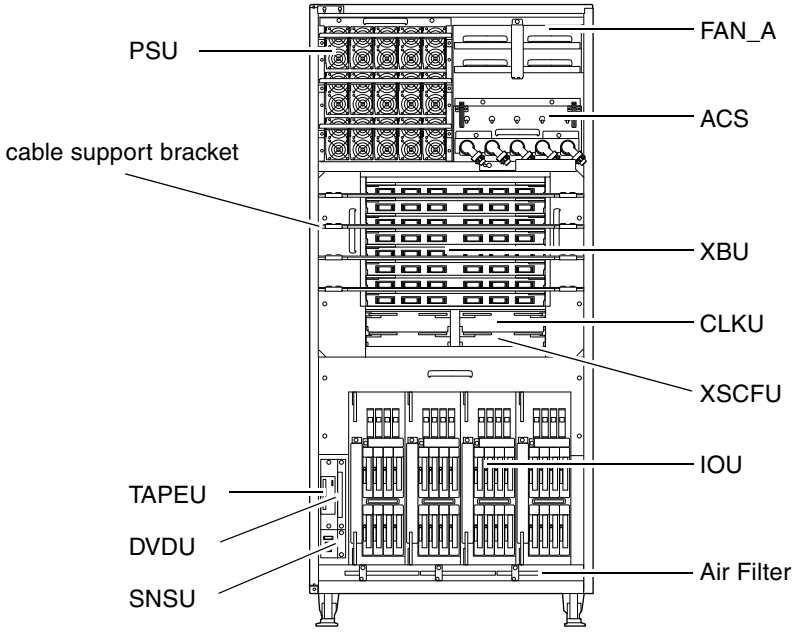


FIGURE 2-8 Rear View - M9000 (with the Expansion Cabinet)

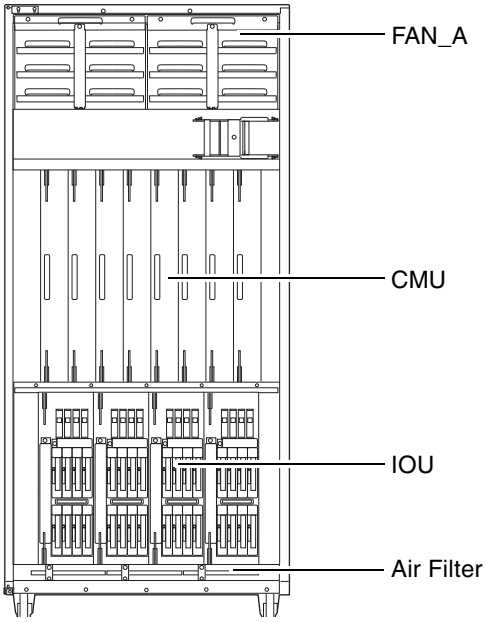
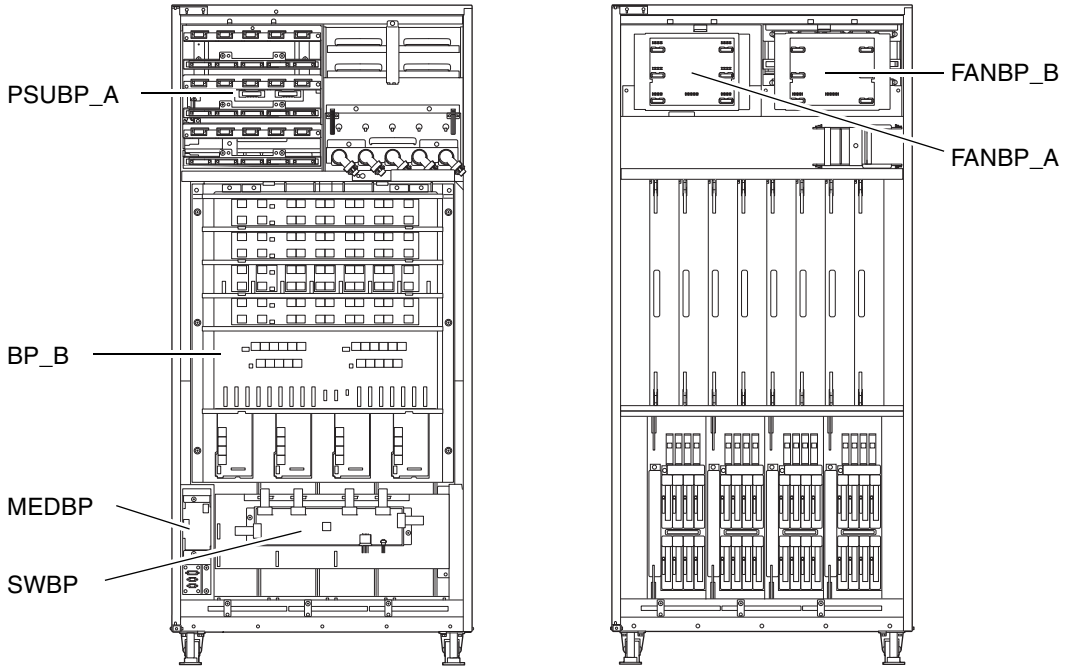


FIGURE 2-9 Internal View - M9000 (with the Expansion Cabinet)



2.2 Labels

2.2.1 System Name Plate Label, Rating Label, ID Label (Japan) or EZ Label (besides Japan), and Standard Label

The important labels affixed on this server are shown in FIGURE 2-10 and FIGURE 2-11. The actual description on the labels may differ from FIGURE 2-10 and FIGURE 2-11.

- The system name plate label includes the model number, serial number, and hardware version, all of which are required for maintenance and management.
- The rating label, which is affixed near the AC power supply, includes the power input rating for the AC power supply.

- The ID label or EZ label is affixed on the front door of the server, and it includes the model name and serial number, both of which are written on the system name plate label.

- The standard label is affixed near the system name plate label, and it includes the certification standards that apply:

  Safety: NRTL/C

  Electrical interference: VCCI-A, FCC-A, DOC-A, and MIC

  Safety and electrical interference: CE

FIGURE 2-10 M8000 Label Location

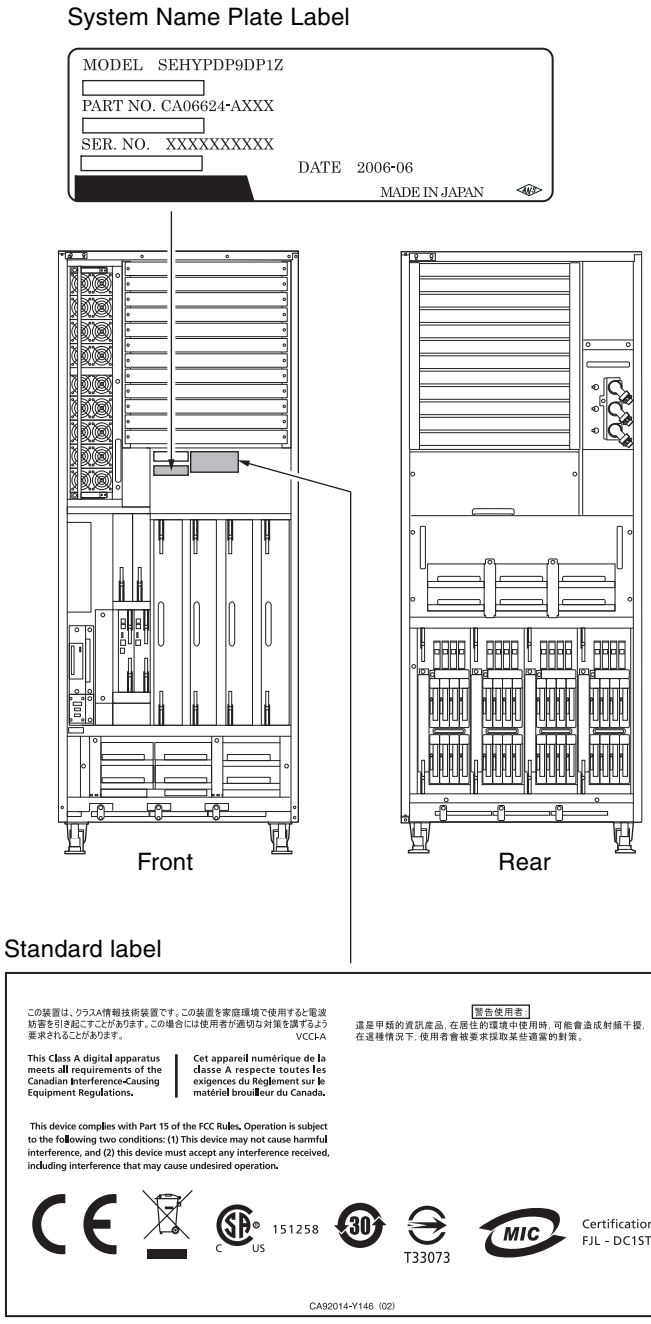
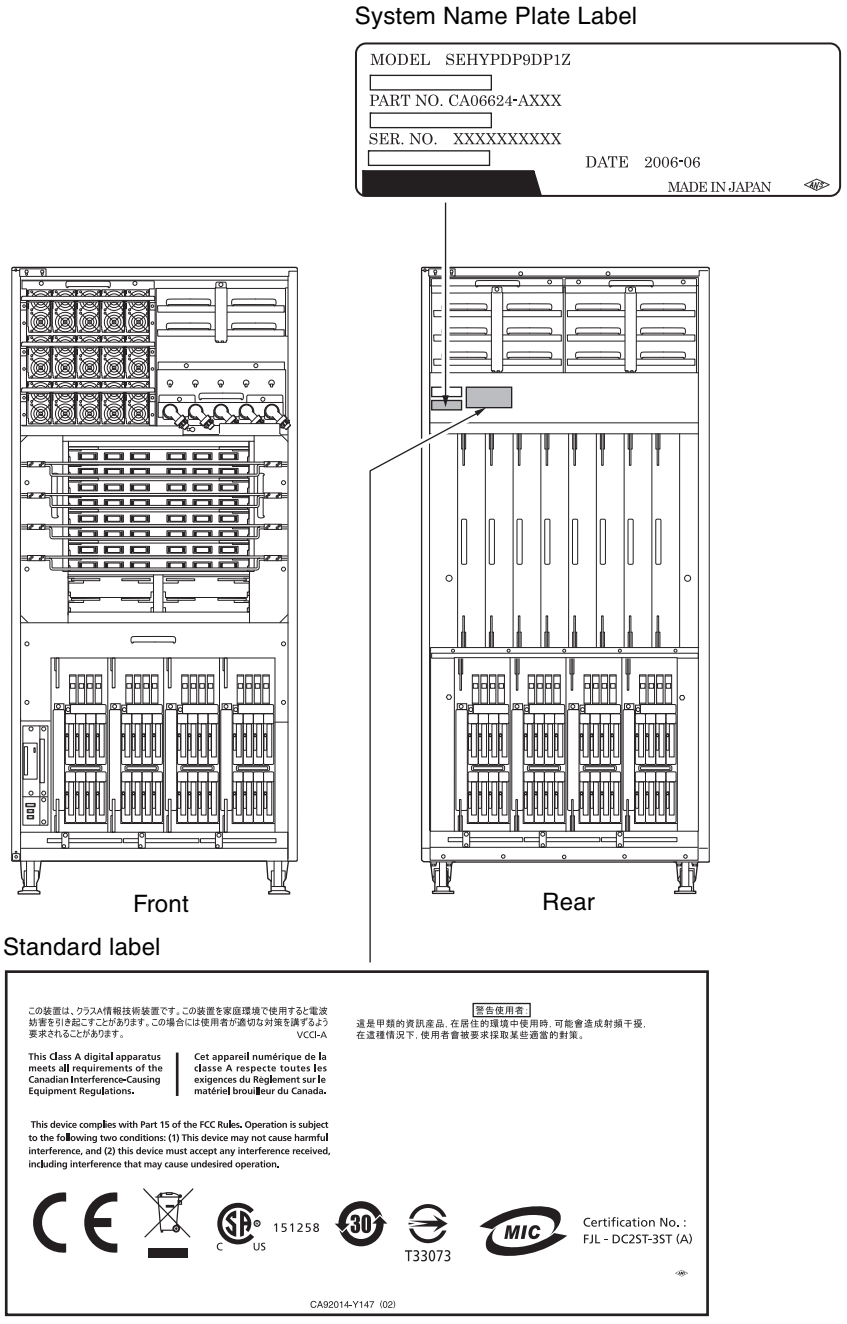

System Name Plate Label
MODEL SEHYPDP9DP1Z
PART NO. CA06624-AXXX
SER. NO. XXXXXXXXXX
DATE 2006-06
MADE IN JAPAN
Front
Rear
Standard label
この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。
VCCI-A
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
警告使用者
這是甲類的資訊產品, 在居住的環境中使用時, 可能會造成射頻干擾, 在這種情況下, 使用者會被要求採取某些適當的對策。
151258
C US
T33073
MIC
Certification No. : FJL - DC1ST (A)
CA92014-Y146 (02)

FIGURE 2-11 M9000 Label Location

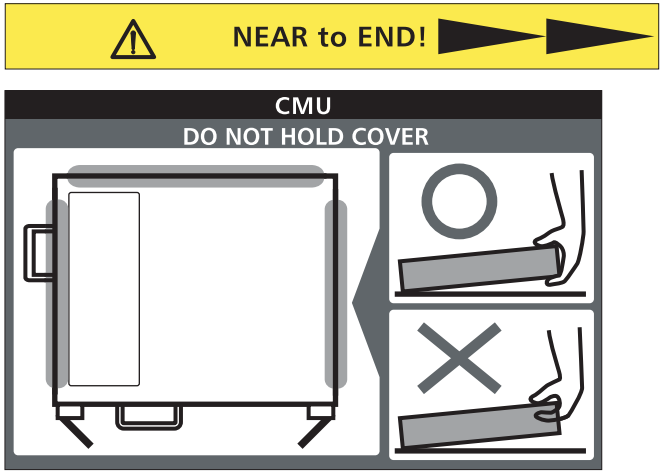

System Name Plate Label
MODEL SEHYPDP9DP1Z
PART NO. CA06624-AXXX
SER. NO. XXXXXXXXXX
DATE 2006-06
MADE IN JAPAN
Front
Rear
Standard label
この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。
VCCI-A
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。
151258
T33073
Certification No. : FJL - DC2ST-3ST (A)
CA92014-Y147 (02)

2.2.2 Labels About Handling

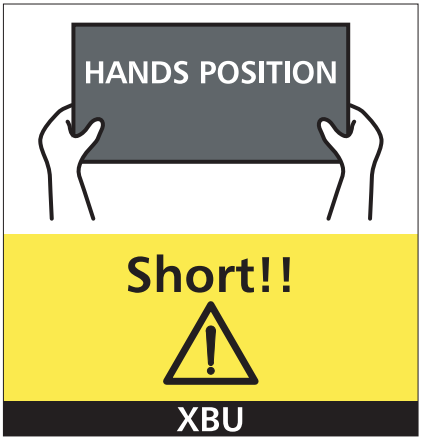
The labels shown below, which are affixed on the high-end server, provide field engineers with important information on component removal and mounting.

Caution – Never peel off the labels.

- Removing and installing a CPU/memory board unit (CMU)



- Removing a crossbar unit (XBU)



- Removing an I/O unit (IOU)

2.3 Operator Panel

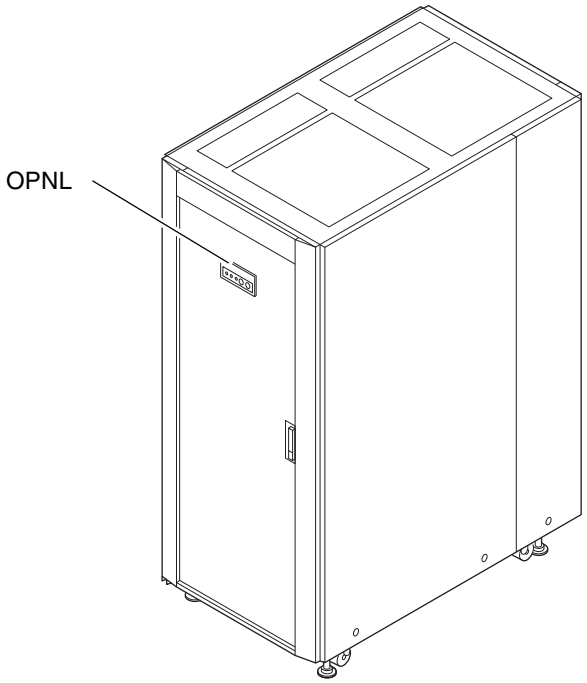
The operator panel controls the high-end server power. The operator panel is usually locked with a key to prevent the server from being mistakenly powered off through an operator error during system operation.

Before starting maintenance work, ask the system administrator to unlock the operation panel.

2.3.1 Operator Panel Location

FIGURE 2-12 indicates the location of the operator panel (OPNL) of the high-end servers. The expansion cabinet is not equipped with the operator panel.

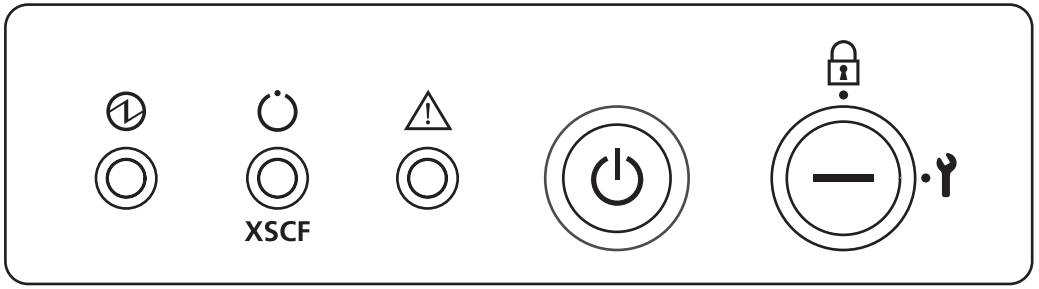
FIGURE 2-12 Operator Panel Location (at the Front of M8000)



2.3.2 Appearance and Operations

The operator panel can be used while the front door of the server is closed. Field engineers, and the system administrator use the operation panel to check the operating state of the server and to perform system power operations. To check the operating state of the server, look at the LEDs. The operating state of the server is checked by observing the LEDs, and the power supply is operated with the POWER switch. FIGURE 2-13 shows the appearance of the operator panel.

FIGURE 2-13 Operator Panel



2.3.3 LED

TABLE 2-1 lists the states of the server that are displayed with the LEDs on the operator panel.

The blinking period is one second (frequency of 1 Hz).

Besides the states listed in TABLE 2-1, the operator panel also displays various states of the server using combinations of the three LEDs. TABLE 2-2 indicates the states that are usually displayed in the course of operation from the power-on to power-off of the high-end server.

TABLE 2-1 State Display by the LEDs (Operator Panel)

LED	Name	Light color	Description of function and state	
	POWER	Green	Indicates whether power to the SPARC Enterprise server is on.	
			Off	Indicates the power-off state.
			Lit	Indicates the power-on state.
			Blinking	The power-off sequence is in progress.
	STANDBY	Green	Indicates whether the XSCF can be powered on.	
XSCF			Off	Indicates that the system cannot be powered on.
			Blinking	Indicates that initialization processing of the SPARC Enterprise server is in progress after main line switches were switched on.
			Lit	Indicates that the system can be powered on.

TABLE 2-1 State Display by the LEDs (Operator Panel) *(Continued)*

LED	Name	Light color	Description of function and state	
⚠	CHECK	Amber	Indicates the operating status of the SPARC Enterprise server.	
			Off	Normal state. Otherwise, this indicates that the main line switches were switched off or a power failure occurred.
			Blinking (*1)	Indicates that the operator panel is the maintenance target device.
			Lit	Indicates that the server cannot be started.

Note – *1)If the maintenance target component is indicted by a blinking CHECK LED, the LED may be called a locater.

TABLE 2-2 State Display by LED Combination (Operator Panel)

LED			
POWER	XSCF STANDBY	CHECK	
⏻	↻	⚠	Description of the state
Off	Off	Off	The main line switch is switched off.
Off	Off	On	The main line switch is switched on.
Off	Blinking	Off	The XSCF is being initialized.
Off	Blinking	On	An error occurred in the XSCF.
Off	On	Off	• The XSCF is on standby. • The system is waiting for power-on of the air conditioning system.
On	On	Off	• Warm-up standby processing is in progress (power-on is delayed). • The power-on sequence is in progress. • The system is in operation.
Blinking	On	Off	• The power-off sequence is in progress. • Fan termination is being delayed.

2.3.4 Switch

The operator panel has the mode switch, which sets the operation mode, and the POWER switch, which is used to power on and off the system.

TABLE 2-3 Switches (Operator Panel)

Switch	Name		Description of function
	Mode		This key switch is used to set an operation mode for the server. Insert the special key that is under the customer's control, to switch between modes.
		Locked	Normal operation mode • The system can be powered on with the POWER switch, but it cannot be powered off with the POWER switch. • The key can be pulled out at this key position.
		Service	Mode for maintenance • The system can be powered on and off with the POWER switch. • The key cannot be pulled out at this key position. • Maintenance is performed in Service mode while the server is stopped.
	POWER		This switch is used to control the server power. Power-on and power-off are controlled by pressing this switch in different patterns, as described below.
		Holding down for a short time (less than 4 seconds)	Regardless of the mode switch state, the server (all domains) is powered on. At this time, processing for waiting for facility (air conditioners) power-on and warm-up completion is skipped.(*1)
		Holding down for a long time in Service mode (4 seconds or longer)	• If power to the server is on (at least one domain is operating), shutdown processing is executed for all domains before power-off processing. • If the system is being powered on, the power-on processing is cancelled, and the system is powered off. • If the system is being powered off, the operation of the POWER switch is ignored, and the power-off processing is continued.

Note – *1)In normal operation, the server is powered on only when the computer room environmental conditions satisfy the specified values. Then, the server remains in the reset state until the operating system is booted.

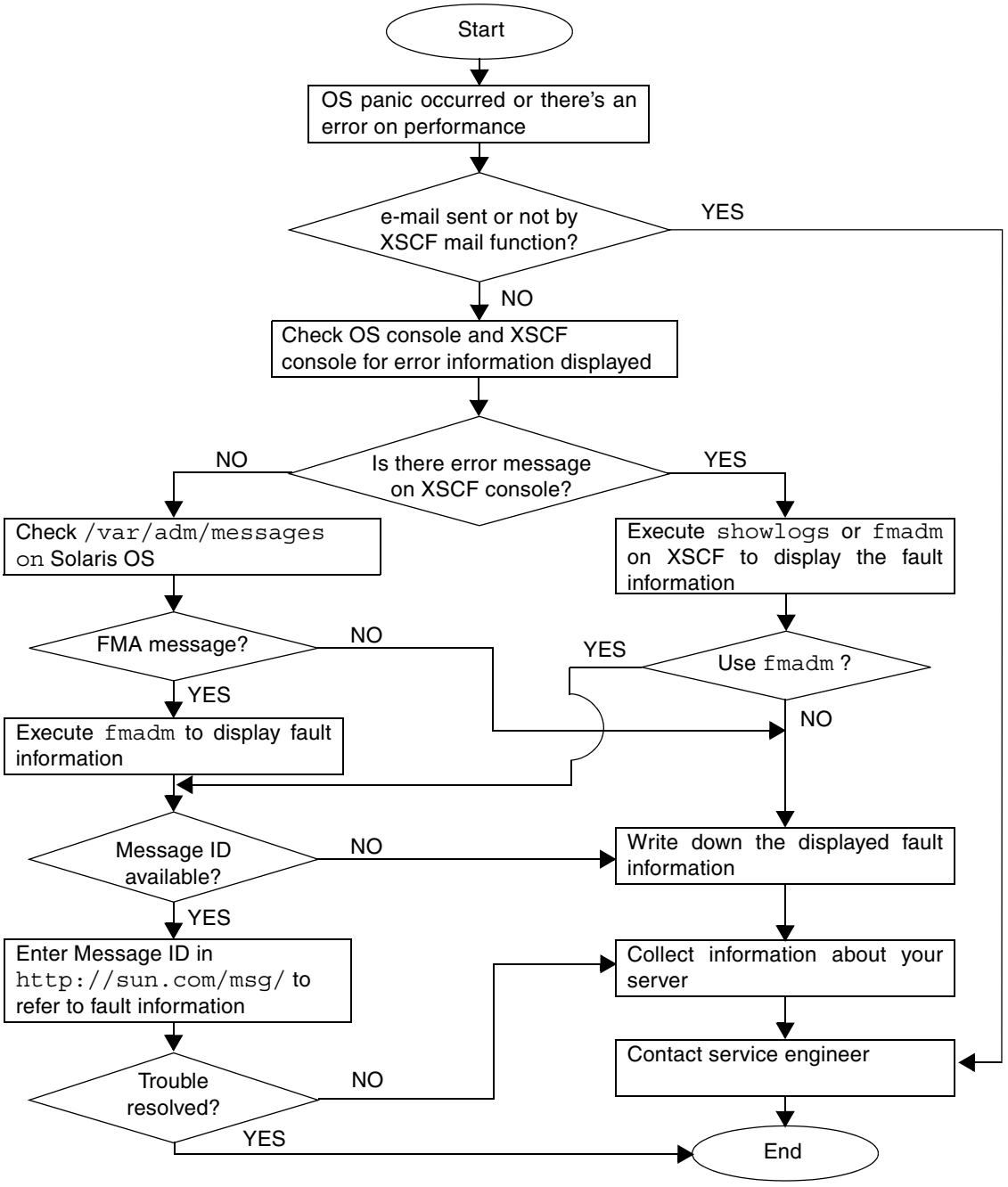
TABLE 2-4 Meanings of the Mode Switch

Function	Mode Switch	
	Locked	Locked
Inhibition of Break Signal Reception	Enabled. Reception of the break signal can be enabled or disabled for each domain using setdomainmode.	Disabled
Power On/Off by power switch	Only power on is enabled	Enabled

2.4 Determining Which Diagnostics Methods To Use

When an error occurs, a message is often displayed on the monitor. Use the flowcharts in FIGURE 2-14 to find the correct methods for diagnosing problems.

FIGURE 2-14 Diagnostic Method Flow Chart



2.5 Checking the Server and System Configuration

Before and after maintenance work, the state and configuration of the server and components should be checked and the information saved. For recovery from a problem, conditions related to the problem and the repair status must be checked. The operating conditions must remain the same before and after maintenance.

A functioning server without any problems should not display any error conditions. For example:

- The syslog file should not display error messages.
- * mark is not displayed in SCF shell command `showhandconf`
- The administrative console should not display error messages.
- The server processor logs should not display any error messages.
- The Solaris™ Operating System (Solaris OS) message files should not indicate any additional errors.

2.5.1 Checking the Hardware Configuration and FRU Status

To replace a faulty component and perform the maintenance on the server it is important to check and understand the hardware configuration of the server and the state of each hardware component.

The hardware configuration refers to information that indicates to what layer a component belongs in the hardware configuration.

The status of each hardware component refers to information on the condition of the standard or optional component in the server: temperature, power supply voltage, CPU operating conditions, and other times.

The hardware configuration and the status of each hardware component can be checked from the maintenance terminal using XSCF Shell commands.

TABLE 2-5 lists commands for checking the hardware configuration and status. For details, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*.

TABLE 2-5 Commands for Checking Hardware Configuration and Status

Command	Description
`showhardconf`	Displays the system layer that includes a faulty component.
`showstatus`	Displays the status of a component. This command is used to check only a faulty component.
`showboards`	Displays the use status of individual devices and resources.
`showdcl`	Displays domain configuration information (hardware resource information).
`showfru`	Displays device setting information.
`ioxadm`	Displays the FRU status of external I/O expansion unit as normal or abnormal.

Also some conditions can be checked based on the lit and/ or blinking state of the component LEDs (TABLE 2-11 and TABLE 2-12).

2.5.1.1 Checking the Hardware Configuration

Login authority is required to check the hardware configuration. The following procedure for these checks can be made from the maintenance terminal. Ask the system administrator for necessary information, such as a password. For the detailed procedure, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

1. **Log in to the XSCF.**

2. **Execute the** `showhardconf` **command.**

```
XSCF> showhardconf
```

The `showhardconf` command will print the hardware configuration information to the screen. See the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide* for more detailed information.

2.5.2 Checking the Software and XSCF Firmware Configurations

The software and firmware configurations and versions affect the operation of the server. To change the configuration or investigate a problem, check the latest information and check for any problems in the software.

Software and firmware varies according to users.

- The software configuration and version can be checked in the Solaris Operating System. Refer to the Solaris OS documentation for more information.
- The firmware configuration and versions can be checked from the maintenance terminal using XSCF Shell commands. Refer to the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide* for more detailed information.

Check the software and firmware configuration information with assistance from the system administrator. However, if you have received login authority from the system administrator, the following commands can be used from the maintenance terminal for these checks:

TABLE 2-6 Commands for Checking the Software Configuration

Command	Description
`showrev`(1M)	Displays information on patches applied to the system.
`uname`(1)	Outputs current information regarding the system to the standard output.

TABLE 2-7 Commands for Checking the XSCF Firmware Configuration

Command	Description
`version`(8)	XSCF Shell command that outputs the current firmware version information.
`showhardconf`(8)	XSCF Shell command that displays what layer of the system includes a faulty component.
`showstatus`(8)	XSCF Shell command that displays the status of a component. This command is used when only a faulty component is to be checked.
`showdcl`(8)	XSCF Shell command that displays the configuration information of a domain (hardware resource information).
`showfru`(8)	XSCF Shell command that displays the setting information of a device.

2.5.2.1 Checking the Software Configuration

The following procedure for these checks can be made from any terminal window terminal.

1. Execute the `showrev` command.

```
# showrev
```

The `showrev` command will print the system configuration information to the screen.

2.5.2.2 Checking the Firmware Configuration

Login authority is required to check the firmware configuration. The following procedure for these checks can be made from the maintenance terminal:.

1. **Log in to the XSCF.**

2. **Execute the `version` command.**

```
XSCF> version
```

The `version` command will print the firmware version information to the screen. See the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide* for more detailed information.

2.5.3 Downloading the Error Log Information

If you want to download the error log information, use the XSCF log fetch function. The XSCF Unit has an interface with external units so that a service engineer can easily obtain useful maintenance information such as error logs

Connect the maintenance terminal, and use the CLI or BUI to issue a download instruction to the maintenance terminal to download Error Log information over the XSCF-LAN.

Note – When the XSCF unit has a redundant configuration, log in also to the standby XSCF and obtain the log file in the same manner.

2.6 Error Conditions

This section describes error conditions and relevant corrective actions.

This work is explained in the following sections:

- Section 2.6.1, "Predictive Self-Healing Tools" on page 2-27
- Section 2.6.2, "Monitoring Output" on page 2-28
- Section 2.6.3, "Messaging Output" on page 2-29

Details of the fault information, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

You can find more detailed descriptions of Solaris OS Predictive Self-Healing at the website below:

http://www.sun.com/bigadmin/features/articles/selfheal.html

Predictive self-healing is an architecture and methodology for automatically diagnosing, reporting, and handling software and hardware fault conditions. This new technology lessens the time required to debug a hardware or software problem and provides the administrator and technical support with detailed data about each fault.

2.6.1 Predictive Self-Healing Tools

In Solaris OS, the fault manager runs in the background. If a failure occurs, the system software recognizes the error and attempts to determine what hardware is faulty. The software also takes steps to prevent that component from being used until it has been replaced. Some of the specific activities the software takes include:

- Receives telemetry information about problems detected by the system software
- Diagnoses the problems
- Initiates pro-active self-healing activities. For example, the fault manager can disable faulty components.

  The state of a FRU, group of FRUs, or part of a FRU, that has been isolated because a fault was detected. The isolation is usually done to prevent possibly faulty components from affecting other system components. The part that is isolated is not always the faulty part alone; a normal part may be degraded to isolate the faulty part. If a function required for the operation of the system is degraded, a system failure may result.

- When possible, causes the faulty FRU to provide an LED indication of a fault in addition to populating the system console messages with more details

TABLE 2-8 shows a typical message generated when a fault occurs. The message appears on your console and is recorded in the /var/adm/messages file.

Note – The message in TABLE 2-8 indicates that the fault has already been diagnosed. Any corrective action that the system can perform has already taken place. If your server is still running, it continues to run.

TABLE 2-8 Predictive Self Healing Message

Output displayed	Description
Nov 1 16:30:20 dt88-292 EVENT-TIME: Tue Nov 1 16:30:20 PST 2005	EVENT-TIME: the time stamp of the diagnosis.
Nov 1 16:30:20 dt88-292 PLATFORM: SUNW,A70, CSN: -, HOSTNAME: dt88-292	PLATFORM: A description of the server encountering the problem.
Nov 1 16:30:20 dt88-292 SOURCE: eft, REV: 1.13	SOURCE: Information on the Diagnosis Engine used to determine the fault.
Nov 1 16:30:20 dt88-292 EVENT-ID: afc7e660-d609-4b2f-86b8-ae7c6b8d50c4	EVENT-ID: The Universally Unique event ID for this fault.
Nov 1 16:30:20 dt88-292 DESC: Nov 1 16:30:20 dt88-292 A problem was detected in the PCI-Express subsystem	DESC: A basic description of the failure.
Nov 1 16:30:20 dt88-292 Refer to http://sun.com/msg/SUN4-8000-0Y for more information.	WEBSITE: Where to find specific information and actions for this fault.
Nov 1 16:30:20 dt88-292 AUTO-RESPONSE: One or more device instances may be disabled	AUTO-RESPONSE: What, if anything, the system did to alleviate any follow-on issues
Nov 1 16:30:20 dt88-292 IMPACT: Loss of services provided by the device instances associated with this fault	IMPACT: A description of what that response might have done.
Nov 1 16:30:20 dt88-292 REC-ACTION: Schedule a repair procedure to replace the affected device. Use Nov 1 16:30:20 dt88-292 fmdump -v -u EVENT_ID to identify the device or contact Sun for support.	REC-ACTION: A short description of what the system administrator should do.

2.6.2 Monitoring Output

To understand error conditions, collect monitoring output information, by using the commands shown below.

TABLE 2-9 lists the commands for checking the monitoring output.

TABLE 2-9 Commands for Checking the Monitoring Output

Command	Operand	Description
`showlogs(8)`	`console`	XSCF firmware collects console logs of console messages that were output through the XSCF. This command collects all the console messages displayed to users.
	`monitor`	Logs the messages displayed in the message window of the BUI/CLI.
	`panic`	Saves as panic logs the console logs that are logged when a reset is received after a panic notification.
	`ipl`	Collects the console data generated during a period from power-on of a domain to completion of operating system startup (system running).

2.6.3 Messaging Output

To understand error conditions, collect messaging output information, by using the commands shown below.

TABLE 2-10 lists the commands for checking the messaging output.

TABLE 2-10 Commands for Checking the Messaging Output

Command	Operand	Description
showlogs	env	Collects the temperature history log. The SPARC Enterprise server environmental temperature data and power status are collected at a 10-minute interval. The data is stored for a maximum of six months.
	power	Collects the log of power events and reset events. The target range covers the SPARC Enterprise server, External I/O Expansion units, and UPSs.
	event	Collects the message which accompanies the command or the progress of operation such as Dynamic Reconfiguration (DR), the status of operation on the operator panel, the event such as the shut down request to OS due to power failure or abnormal temperature, as event log. This information is used to analyze faults and investigate the use status of individual devices at a customer's site, and it is kept as a maintenance work history.
	error	Information on the SPARC Enterprise server hardware faults detected by the SCF, POST/OpenBoot PROM, or ESF machine management and software monitoring error information are logged as SCF error logs. The showlogs error command can display with hexadecimal codes the error information stored in the SCF error log and information on faulty components.
fmdump(1M) fmdump(8)		Hardware and software are automatically diagnosed according to the fault management architecture (FMA), and the diagnosis results and errors are automatically recorded. The fmdump command can display the recorded information. It is provided as a Solaris OS command and XSCF Shell command. The information can be checked at the site at the specified URL by using a displayed message ID.

Each error message logged by the predictive self-healing architecture has a code associated with it as well as a web address that can be followed to get the most up-to-date course of action for dealing with that error.

Refer to the Solaris OS documentation for more information on predictive self-healing.

2.7 LED Error Display

This section explains the LEDs of each FRU that are to be checked when the relevant FRU is replaced. Each LED can be checked after the door of a cabinet is opened.

Whether the state of the entire system is normal can be learned by checking the operator panel (outside). When an error occurs in an individual hardware component in the system, the LEDs of the FRU containing the hardware component

that has caused the error indicate that an error has occurred. The LEDs on the operator panel (back) indicate the status of the operator as a single unit. However, some FRUs like DIMMs do not have LEDs.

Whether a FRU without LEDs is in the normal state can be checked by executing the XSCF Shell commands `showhardconf` and `ioxadm` from a maintenance terminal. For details of the commands, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*.

2.7.1 When target FRU is indicated by LEDs

When an error message is displayed at the system console and the cause of the error is in hardware, a faulty FRU must be removed and replaced. Each FRU is equipped with an LED to indicate whether an error has occurred in the FRU and an LED to indicate whether the FRU can be removed. Most FRUs are named READY LED and CHECK LED. In some cases, names are not indicated but the icons are always printed or icon labels are always affixed. Such FRUs include the back of the operator panel, XSCFUs, CMUs, XBUs, CLKUs, FANs, and HDDs.

2.7.2 When target FRU is not indicated by LEDs

For some FRUs, the READY LED and CHECK LED are not used as the names of the LEDs that are checked at replacement. Even in such a case, the same icons as those for the READY LED and CHECK LED are used so that the meaning of LEDs can be understood. Even if the names of LEDs are not indicated, the icons are always printed or icon labels are always affixed.

TABLE 2-11 LED Display That Should Be Checked When a FRU Is Replaced (Common)

LED	Display and meaning	
READY (green)	Indicates whether the unit is operating (whether it is configured into the system).	
	Lit	Indicates that the FRU is operating. The FRU cannot be disconnected and removed from the system. Therefore, the FRU cannot be replaced.
	Blinking	Indicates that the FRU is being configured into the system (or, for an XSCFU, being initialized) or being disconnected from the system. However, for a PSU, it indicates that the main line switch has been switched on.
	Off	Indicates that the FRU is stopped and disconnected from the system. Therefore, the FRU can be replaced.

TABLE 2-11 LED Display That Should Be Checked When a FRU Is Replaced (Common) *(Continued)*

LED	Display and meaning	
CHECK (amber)	Indicates either that the unit contains an error or that the unit is a target device for replacement.	
	Lit	Indicates that an error has been detected in the hardware of the FRU. (For an HDD, the LED is lit according to the instruction from the software or middleware.)
	Blinking (*1)	Indicates that the FRU is to be replaced.
	Off	Indicates that the state of the FRU is normal.

Note – *1)If the maintenance target component is indicted by a blinking CHECK LED, the LED may be called a locater.

TABLE 2-12 Status Display of LEDs Defined Individually for Each FRU

FRU	LED Type	Display	Meaning
XSCFU	READY	Lit (green)	Indicates that the XSCFU is in use. In this state, the XSCFU cannot be removed (cannot be replaced).
		Blinking (green)	Indicates that the XSCFU is being initialized.
		Off	Indicates that the XSCFU can be replaced.
	CHECK	Lit (amber)	Indicates that an error was detected in the XSCFU. However, this LED remains on for a few minutes immediately after power-on (until the start of initialization). It does not indicate an error during that time.
		Blinking (amber)	Indicates that the XSCFU is a replacement target.
		Off	Indicates that the XSCFU is in the normal state.
	ACTIVE	Lit (green)	Indicates that the XSCFU is in use (active).
		Off	Indicates that the XSCFU is on standby.

TABLE 2-12 Status Display of LEDs Defined Individually for Each FRU *(Continued)*

FRU	LED Type	Display	Meaning
XSCFU and IOU (display part for LAN)	ACT	Lit (green)	Indicates that communication is being performed through the Ethernet port (LAN port).
		Off	Indicates that no communication is being performed through the Ethernet port (LAN port).
	LINK SPEED	Lit (amber)	Only for an IOU: Indicates that the communication speed is 1G bps.
		Lit (green)	Indicates that the communication speed is 100M bps.
		Off	Indicates that the communication speed is 10M bps.
HDD	READY	Lit (green)	Indicates that the HDD is in operation. In this state, the HDD cannot be removed (cannot be replaced).
		Blinking (green)	Indicates that the HDD is being connected. In this state, the HDD cannot be removed (cannot be replaced).
		Off	Indicates that the HDD can be replaced.
	CHECK	Lit (amber)	Indicates that an error was detected in the HDD. However, this LED remains on for a few minutes immediately after power-on (until the start of initialization). It does not indicate an error during that time.
		Blinking (amber)	Indicates that the HDD is a replacement target.
		Off	Indicates that the HDD is in the normal state.
PCI card (inside an external I/O expansion unit)	(Power)	Lit (green)	Indicates that power is being supplied to the PCI slot.
		Off	Indicates that the PCI card in the PCI slot is stopped.
	(Attention)	Lit (amber)	Indicates that an error occurred in the hardware of the PCI slot.
		Blinking (amber)	Indicates that the PCI card in this PCI slot is a device to be replaced.
		Off	Indicates that the hardware of the PCI slot is normal.

TABLE 2-12 Status Display of LEDs Defined Individually for Each FRU *(Continued)*

FRU	LED Type	Display	Meaning
PSU: power supply unit	POWER	Lit (green)	Indicates that the power to the system is turned on and being supplied.
		Blinking (green)	Indicates that power is being supplied to the PSU, but the PSU is not turned on.
		Off	Indicates that power is not being supplied to the PSU.
	FAIL	Lit (amber)	Indicates that an error occurred in the PSU. Maintenance can be performed.
		Off	Indicates that the PSU is normal.
	PRFL	Lit (amber)	Indicates that the rotational speed of the cooling fan in the PSU is abnormal.
		Off	Indicates that the rotational speed of the cooling fan in the PSU is normal.

2.8 Using the Troubleshooting Commands

After the message in TABLE 2-8 is displayed, you might desire more information about the fault. For complete information about troubleshooting commands, refer to the Solaris OS man pages or the XSCF Shell man pages. This section describes some details of the following commands:

- Section 2.8.1, "Using the `showlogs` Command" on page 2-34
- Section 2.8.2, "Using the `fmdump` Command" on page 2-35
- Section 2.8.3, "Using the `fmadm` Command" on page 2-35
- Section 2.8.4, "Using the `fmstat` Command" on page 2-37

2.8.1 Using the `showlogs` Command

The `showlogs` command will display the contents of a specified log in order of timestamp starting with the oldest date. The `showlogs` command will display the following logs:

- error log
- power log
- event log
- temperature and humidity record
- monitoring message log

- console message log
- panic message log
- IPL message log

```
XSCF> showlogs error
Dated: Mar 30 12:45:31 JST 2005 Code: 00112233-44556677-8899aabbcceeff0
Status: Alarm
Component: PSU#1,PSU#2
Msg: ACFAIL occurred (ACS=3)(FEP type = A1)
Date: Mar 30 17:45:31 JST 2005 Code: 00112233-44556677-8899aabbcceeff0
Status: Faulted
Component: PSU#1,PSU#2,*
Msg: ACFAIL occurred (ACS=3)(FEP type = A1)
XSCF>0
```

2.8.2 Using the `fmdump` Command

The `fmdump` command can be used to display the contents of any log files associated with the Solaris Fault Manager.

The `fmdump` command produces the following output. This example assumes there is only one fault.

```
# fmdump
TIME UUID SUNW-MSG-ID
Nov 02 10:04:15.4911 0ee65618-2218-4997-c0dc-b5c410ed8ec2 SUN4-8000-0Y
```

2.8.3 Using the `fmadm` Command

This section describes the use of the `fmadm` command.

The administrator and all service personnel can use the `fmadm` command. This command can display and change the system configuration parameters managed by the Solaris Fault Manager.

2.8.3.1 `fmadm config` Command

The `fmadm config` command outputs the version and status of the diagnostic engine used by the server. To determine whether the latest diagnostic engine is running, compare the version with the information on the SunSolve website.

```
# fmadm config
MODULE               VERSION  STATUS  DESCRIPTION
cpumem-diagnosis     1.5      active  UltraSPARC-III/IV CPU/Memory Diagnosis
cpumem-retire        1.0      active  CPU/Memory Retire Agent
eft                  1.13     active  eft diagnosis engine
fmd-self-diagnosis   1.0      active  Fault Manager Self-Diagnosis
io-retire            1.0      active  I/O Retire Agent
syslog-msgs          1.0      active  Syslog Messaging Agent
```

2.8.3.2 `fmadm faulty` Command

The `fmadm faulty` command can be used mainly to identify the status of faulty components.

In the following example, the PCI card is degraded and associated with the following UUID `49847040-ce57-e453-9adc-fe66c7c65384`. Also, the "faulted" state may be displayed.

```
# fmadm faulty
STATE      RESOURCE / UUID
-----      --------------------------------------------------
degraded   dev:////pci@2,600000
             49847040-ce57-e453-9adc-fe66c7c65384
```

Note – The error information remains in the Solaris OS even when replacement of the faulty component is completed. Identify the UUID by executing the `fmadm faulty` command, and reset the error information by executing the `fmadm repair` command with the UUID specified.

2.8.3.3 `fmadm repair` Command

The `fmadm repair` command can be used to reset the error information for a faulty component in the Solaris OS.

```
# fmadm repair 49847040-ce57-e453-9adc-fe66c7c65384
fmadm: recorded repair to 3de29de5-6332-ec64-9b49-bacc739fe3c3
```

Note – The error information remains in the Solaris OS even when replacement of the faulty component is completed. Identify the UUID by executing the `fmadm faulty` command, and reset the error information by executing the `fmadm repair` command with the UUID specified.

2.8.4 Using the `fmstat` Command

The `fmstat` command can report statistics associated with the Solaris Fault Manager. The `fmstat` command shows information about DE performance. In the example below, the eft DE (also seen in the console output) has received an event which it accepted. A case is "opened" for that event and a diagnosis is performed to "solve" the cause for the failure.

```
# fmstat
module             ev_recv  ev_acpt  wait  svc_t  %w  %b  open  solve  memsz  bufsz
cpumem-diagnosis         0        0   0.0    0.0   0   0     0      0    3.0     K0
cpumem-retire            0        0   0.0    0.0   0   0     0      0      0      0
eft                      1        1   0.0 1191.8   0   0     1      1   3.3M    11K
fmd-self-diagnosis       0        0   0.0    0.0   0   0     0      0      0      0
io-retire                1        0   0.0   32.4   0   0     0      0    37b      0
syslog-msgs              1        0   0.0    0.5   0   0     0      0    32b      0
```

2.9 Traditional Solaris Troubleshooting Commands

These superuser commands can help you determine if you have issues in your workstation, in the network, or within another server that you are networking with.

The following commands are described in this section:

- Section 2.9.1, "`iostat` Command" on page 2-38
- Section 2.9.2, "`prtdiag` Command" on page 2-39
- Section 2.9.3, "`prtconf` Command" on page 2-41
- Section 2.9.4, "`netstat` Command" on page 2-43
- Section 2.9.5, "`ping` Command" on page 2-44
- Section 2.9.6, "`ps` Command" on page 2-46
- Section 2.9.7, "`prstat` Command" on page 2-47

Most of these commands are located in the `/usr/bin` or `/usr/sbin` directories.

2.9.1 `iostat` Command

The `iostat` command iteratively reports terminal, drive, and tape I/O activity, as well as CPU utilization.

2.9.1.1 Options

TABLE 2-13 describes options for the `iostat` command and how those options can help troubleshoot the server.

TABLE 2-13 Options for `iostat`

Option	Description	How It Can Help
No option	Reports status of local I/O devices.	A quick three-line output of device status.
`-c`	Reports the percentage of time the system has spent in user mode, in system mode, waiting for I/O, and idling.	Quick report of CPU status.
`-e`	Displays device error summary statistics. The total errors, hard errors, soft errors, and transport errors are displayed.	Provides a short table with accumulated errors. Identifies suspect I/O devices.
`-E`	Displays all device error statistics.	Provides information about devices: manufacturer, model number, serial number, size, and errors.
`-n`	Displays names in descriptive format.	Descriptive format helps identify devices.
`-x`	For each drive, reports extended drive statistics. The output is in tabular form.	Similar to the -e option, but provides rate information. This helps identify poor performance of internal devices and other I/O devices across the network.

The following example shows output for one `iostat` command.

```
# iostat -En
c0t0d0     Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Model: ST3120026A     Revision: 8.01   Serial No: 3JT4H4C2
Size: 120.03GB <120031641600 bytes>
Media Error: 0 Device Not Ready: 0   No Device: 0 Recoverable: 0
Illegal Request: 0
c0t2d0     Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Vendor: LITE-ON   Product: COMBO SOHC-4832K Revision: O3K1 Serial
No:
Size: 0.00GB <0 bytes>
Media Error: 0 Device Not Ready: 0 No Device: 0 Recoverable: 0
Illegal Request: 0 Predictive Failure Analysis: 0
```

2.9.2 `prtdiag` Command

The `prtdiag` command displays configuration and diagnostic information. The diagnostic information identifies any failed component.

The `prtdiag` command is located in the `/usr/platform/platform-name/sbin/` directory.

Note – The `prtdiag` command might indicate a slot number different than that identified elsewhere in this document. This is normal.

2.9.2.1 Options

TABLE 2-14 describes options for the `prtdiag` command and how those options can help troubleshooting.

TABLE 2-14 Options for `prtdiag`

Option	Description	How It Can Help
No option	Lists components.	Identifies CPU information, memory configuration, mounted PCI cards, OBP version number, mode switch status, and CPU operational mode.
`-v`	Verbose mode.	Provides the same information as "no option." Additionally, lists the detail information of PCI cards.

The following example shows output for the `prtdiag` command in verbose mode.

```
# prtdiag -v
System Configuration:  Sun Microsystems  sun4u XXXX SPARC Enterprise M8000 Server
System clock frequency: 960 MHz
Memory size: 32768 Megabytes

=================================== CPUs ===================================

       CPU                    CPU                      Run     L2$     CPU    CPU
LSB    Chip                    ID                      MHz     MB      Impl.  Mask
---    ----  ----------------------------------------  ----    ---     -----  ----
 00     0     0,    1,    2,    3,    4,    5,    6,    7    2640  6.0       7   144
 00     1     8,    9,   10,   11,   12,   13,   14,   15    2640  6.0       7   144
 00     2    16,   17,   18,   19,   20,   21,   22,   23    2640  6.0       7   144
 00     3    24,   25,   26,   27,   28,   29,   30,   31    2640  6.0       7   144

========================== Memory Configuration ==========================

        Memory   Available           Memory     DIMM     # of   Mirror   Interleave
LSB     Group    Size                Status      Size    DIMMs  Mode     Factor
---     ------   ------------------  -------     ------   -----  -------  ----------
 00       A          16384MB          okay       1024MB    16     no       8-way
 00       B          16384MB          okay       1024MB    16     no       8-way

======================== IO Cards ========================

LSB     Name             Model
---     -------------- ------------
 00     scsi             LSI,1064
 00     network          N/A
 00     network          N/A
 00     scsi             LSI,1064
 00     network          N/A
 00     network          N/A
```

```
==================== Hardware Revisions ====================

System PROM revisions:
----------------------

OBP 4.24.4 2007/11/05 10:27


=================== Environmental Status ===================

Mode switch is in UNLOCK mode

=================== System Processor Mode ===================

SPARC64-VII mode


#
```

2.9.3 `prtconf` Command

Similar to the `show-devs` command run at the ok prompt, the `prtconf` command displays the devices that are configured.

The `prtconf` command identifies hardware that is recognized by the Solaris OS. If hardware is not suspected of being bad yet software applications are having trouble with the hardware, the `prtconf` command can indicate if the Solaris OS software recognizes the hardware, and if a driver for the hardware is loaded.

2.9.3.1 Options

TABLE 2-15 describes options for the `prtconf` command and how those options can help troubleshooting.

TABLE 2-15 Options for `prtconf`

Option	Description	How It Can Help
No option	Displays the device tree of devices recognized by the OS.	If a hardware device is recognized, then it is probably functioning properly. If the message "(driver not attached)" is displayed for the device or for a sub-device, then the driver for the device is corrupt or missing.
`-D`	Similar to the output of no option, however the device driver is listed.	Lists the driver needed or used by the OS to enable the device.
`-p`	Similar to the output of no option, yet is abbreviated.	Reports a brief list of the devices.
`-V`	Displays the version and date of the OpenBoot PROM firmware.	Provides a quick check of firmware version.

The following example shows output for the `prtconf` command.

```
# prtconf
System Configuration:  Sun Microsystems  sun4u
Memory size: 32768 Megabytes
System Peripherals (Software Nodes):

SUNW,SPARC-Enterprise
    scsi_vhci, instance #0
    packages (driver not attached)
        SUNW,builtin-drivers (driver not attached)
        deblocker (driver not attached)
        disk-label (driver not attached)
        terminal-emulator (driver not attached)
        obp-tftp (driver not attached)
        ufs-file-system (driver not attached)
    chosen (driver not attached)
    openprom (driver not attached)
        client-services (driver not attached)
    options, instance #0
    aliases (driver not attached)
    memory (driver not attached)
    virtual-memory (driver not attached)
```

```
    pseudo-console, instance #0
    nvram (driver not attached)
    pseudo-mc, instance #0
    pseudo-mc, instance #1
    pseudo-mc, instance #4
    cmp (driver not attached)
        core (driver not attached)
             cpu (driver not attached)
             cpu (driver not attached)

(The rest is omitted.)
```

2.9.4 `netstat` Command

The `netstat` command displays the network status.

2.9.4.1 Options

TABLE 2-16 describes options for the `netstat` command and how those options can help troubleshooting.

TABLE 2-16 Options for `netstat`

Option	Description	How It Can Help
`-i`	Displays the interface state, including packets in/out, error in/out, collisions, and queue.	Provides a quick overview of the network status.
`-i` *interval*	Providing a trailing number with the `-i` option repeats the `netstat` command every *interval* seconds.	Identifies intermittent or long duration network events. By piping netstat output to a file, overnight activity can be viewed all at once.
`-p`	Displays the media table.	Provides MAC address for hosts on the subnet.
`-r`	Displays the routing table.	Provides routing information.
`-n`	Replaces host names with IP addresses.	Used when an address is more useful than a host name.

The following example shows output for the `netstat -p` command.

```
# netstat -p

Net to Media Table: IPv4
Device   IP Address               Mask        Flags    Phys Addr
------ ---------------------- ---------------- ----- ---------------
bge0   phatair-46             255.255.255.255         08:00:20:92:4a:47
bge0   ns-umpk27-02-46        255.255.255.255         08:00:20:93:fb:99
bge0   moreair-46             255.255.255.255         08:00:20:8a:e5:03
bge0   fermpk28a-46           255.255.255.255         00:00:0c:07:ac:2e
bge0   fermpk28as-46          255.255.255.255         00:50:e2:61:d8:00
bge0   kayakr                 255.255.255.255         08:00:20:d1:83:c7
bge0   matlock                255.255.255.255    SP   00:03:ba:27:01:48
bge0   toronto2               255.255.255.255         08:00:20:b6:15:b5
bge0   tocknett               255.255.255.255         08:00:20:7c:f5:94
bge0   mpk28-lobby            255.255.255.255         08:00:20:a6:d5:c8
bge0   efyinisedeg            255.255.255.255         08:00:20:8d:6a:80
bge0   froggy                 255.255.255.255         08:00:20:73:70:44
bge0   d-mpk28-46-245         255.255.255.255         00:10:60:24:0e:00
bge0   224.0.0.0              240.0.0.0          SM   01:00:5e:00:00:00
```

2.9.5 `ping` Command

The `ping` command sends ICMP ECHO_REQUEST packets to network hosts. Depending on how the `ping` command is configured, the output displayed can identify troublesome network links or nodes. The destination host is specified in the variable hostname.

2.9.5.1 Options

TABLE 2-17 describes options for the `ping` command and how those options can help troubleshooting.

TABLE 2-17 Options for `ping`

Option	Description	How It Can Help
hostname	The probe packet is sent to *hostname* and returned.	Verifies that a host is active on the network.
`-g` *hostname*	Forces the probe packet to route through a specified gateway.	By identifying different routes to the target host, those individual routes can be tested for quality.
`-i` *interface*	Designates which interface to send and receive the probe packet through.	Enables a simple check of secondary network interfaces.
`-n`	Replaces host names with IP addresses.	Used when an address is more beneficial than a host name.
`-s`	Pings continuously in one-second intervals. Ctrl-C aborts. Upon abort, statistics are displayed.	Helps identify intermittent or long-duration network events. By piping ping output to a file, activity overnight can later be viewed at once.
`-svR`	Displays the route the probe packet followed in one second intervals.	Indicates probe packet route and number of hops. Comparing multiple routes can identify bottlenecks.

The following example shows output for the `ping -s` command.

```
# ping -s teddybear
PING teddybear: 56 data bytes
64 bytes from teddybear (192.146.77.140): icmp_seq=0. time=1. ms
64 bytes from teddybear (192.146.77.140): icmp_seq=1. time=0. ms
64 bytes from teddybear (192.146.77.140): icmp_seq=2. time=0. ms
^C
----teddybear PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 0/0/1
```

2.9.6 ps Command

The ps command lists the status of processes. Using options and rearranging the command output can assist in determining the resource allocation.

2.9.6.1 Options

TABLE 2-18 describes options for the ps command and how those options can help troubleshooting.

TABLE 2-18 Options for ps

Option	Description	How It Can Help
-e	Displays information for every process.	Identifies the process ID and the executable.
-f	Generates a full listing.	Provides the following process information: user ID, parent process ID, time when executed, and the path to the executable.
-o *option*	Enables configurable output. The pid, pcpu, pmem, and comm options display process ID, percent CPU consumption, percent memory consumption, and the responsible executable, respectively.	Provides only most important information. Knowing the percentage of resource consumption helps identify processes that are affecting performance and might be hung.

The following example shows output for one ps command.

```
# ps -eo pcpu,pid,comm|sort -rn
 1.4 100317 /usr/openwin/bin/Xsun
 0.9 100460 dtwm
 0.1 100677 ps
 0.1 100600 ksh
 0.1 100591 /usr/dt/bin/dtterm
 0.1 100462 /usr/dt/bin/sdtperfmeter
 0.1 100333 mibiisa
%CPU     PID COMMAND
 0.0 100652 /bin/csh
. . .
```

Note – When using sort with the -r option, the column headings are printed so that the value in the first column is equal to zero.

2.9.7 `prstat` Command

The prstat utility iteratively examines all active processes and reports statistics based on the selected output mode and sort order. The `prstat` command provides output similar to the `ps` command.

2.9.7.1 Options

TABLE 2-19 describes options for the `prstat` command and how those options can help troubleshooting.

TABLE 2-19 Options for `prstat`

Option	Description	How It Can Help
No option	Displays a sorted list of the top processes that are consuming the most CPU resources. List is limited to the height of the terminal window and the total number of processes. Output is automatically updated every five seconds. Ctrl-C aborts.	Output identifies process ID, user ID, memory used, state, CPU consumption, and command name.
`-n` *number*	Limits output to number of lines.	Limits amount of data displayed and identifies primary resource consumers.
`-s` *key*	Permits sorting list by key parameter.	Useful keys are `cpu` (default), `time`, and `size`.
`-v`	Verbose mode.	Displays additional parameters.

The following example shows output for the `prstat` command.

```
# prstat -n 5 -s size
PID     USERNAME  SIZE    RSS  STATE  PRI  NICE  TIME     CPU   PROCESS/NLWP
100524  mm39236    28M    21M  sleep  48    0    0:00.26  0.3%  maker6X.exe/1
100317  root       28M    69M  sleep  59    0    0:00.26  0.7%  Xsun/1
100460  mm39236    11M  8760K  sleep  59    0    0:00.03  0.0%  dtwm/8
100453  mm39236  8664K  4928K  sleep  48    0    0:00.00  0.0%  dtsession/4
100591  mm39236  7616K  5448K  sleep  49    0    0:00.02  0.1%  dtterm/1
Total: 65 processes, 159 lwps, load averages: 0.03, 0.02, 0.04
```

CHAPTER 3

Periodic Maintenance

Caution – The information in this chapter and subsequent chapters is intended for service engineers.
Persons other than the authorized field engineers should use this information only for reference and should not actually perform the work.

This chapter explains the maintenance work that must be performed regularly regardless of whether a problem has occurred. The actual work is limited to preventing dust in the environment from creating pollution.

This information is explained in the following sections:

- Section 3.1, "Cleaning a Tape Drive Unit" on page 3-1
- Section 3.2, "Cleaning an Air Filter (Server)" on page 3-2
- Section 3.3, "Cleaning an Air Filter (I/O Unit)" on page 3-5

The high-end server is equipped with air filters at the bottom of the cabinet. These air filters filter out dust particles from the air that the fans suck in from the floor into the cabinet. If the filters become clogged, the ventilation volume is reduced and the temperature rises, leading to problems. Although the frequency of cleaning varies with the operating environment, the air filters must be cleaned on a regular basis to ensure that they do not become clogged with dust. Each I/O unit also has air filters. Clean them at the same time that the air filters of the server are cleaned.

When the service life expiration date of an air filter has already passed, replace it by referring to the air filter cleaning procedure.

3.1 Cleaning a Tape Drive Unit

The head in a tape drive unit must be cleaned regularly.

Each tape drive unit used for operation must be cleaned once every 24 hours of operation. Even tape drive units not used for operation must be cleaned once every month.

Although cleaning work can be performed in either hot or cold system maintenance mode, the SPARC Enterprise server power must be on when a cleaning cassette is used. The cleaning procedure is as follows.

1. **If a tape cassette has been inserted in the tape drive unit, remove it from the unit.**
2. **While holding the cleaning cassette with the ▲ mark side facing right, insert it into the tape drive unit slot.**

   Head cleaning begins automatically.
3. **The cleaning cassette is automatically ejected when cleaning is completed. Remove it from the slot.**
4. **To use the tape cassette that was removed in Step 1, reinsert it into the tape drive unit.**
5. **Confirm that the tape drive unit is in the normal state.**

At this point, head cleaning is finished.

If one of the following problems occurs, replace the cleaning cassette immediately:

- The cleaning cassette is not automatically ejected within one minute after being inserted.
- The tape is fully wound on the take-up reel on the right side. (The cassette can no longer be reused.)

Use only specified cleaning cassettes.

Note – Contact your sales representative for tape drive unit options on SPARC Enterprise M8000/M9000 servers.

3.2 Cleaning an Air Filter (Server)

An air filter may be cleaned while power to the server is on. Although the air filters must be cleaned once a year, be sure to clean them if they become visibly dirty, even if they are not scheduled for cleaning.

A high-end server cabinet is equipped with a total of six air filters: three at the front and three at the rear at the bottom.

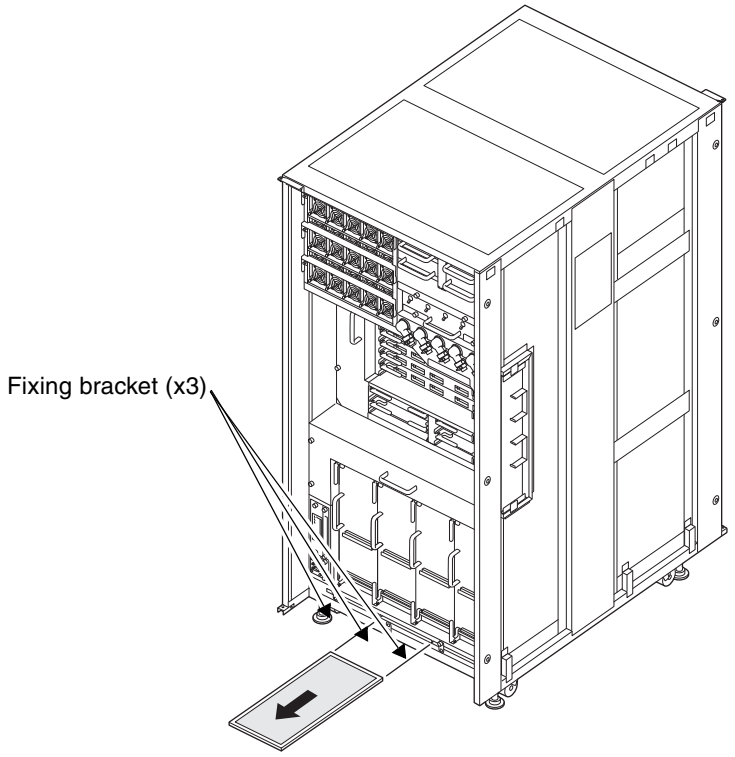
Note – One concern about cleaning the air filters while power to the server is on is that dislodged dust may be sucked inside the system when the air filters are pulled out. Therefore, gently and slowly pull them out. Complete the cleaning as quickly as possible.

Caution – If you must use a vacuum cleaner for this work, use it outside the computer room. Do not use it inside the computer room. Using a vacuum cleaner inside the computer room may result in a server failure.

Because the structure and the mounting environment of air filters are the same, the descriptions in the figures covering filter cleaning refer to, as an example, the air filters at the front of each model.

1. **Unlock and open the front and rear doors of the server. For details, see** Chapter 5**.**
2. **Using a Phillips screwdriver, loosen the screw securing the fixing bracket of an air filter, and turn the bracket so that it faces downward.**

FIGURE 3-1 Removing Air Filters (Example for the M8000)

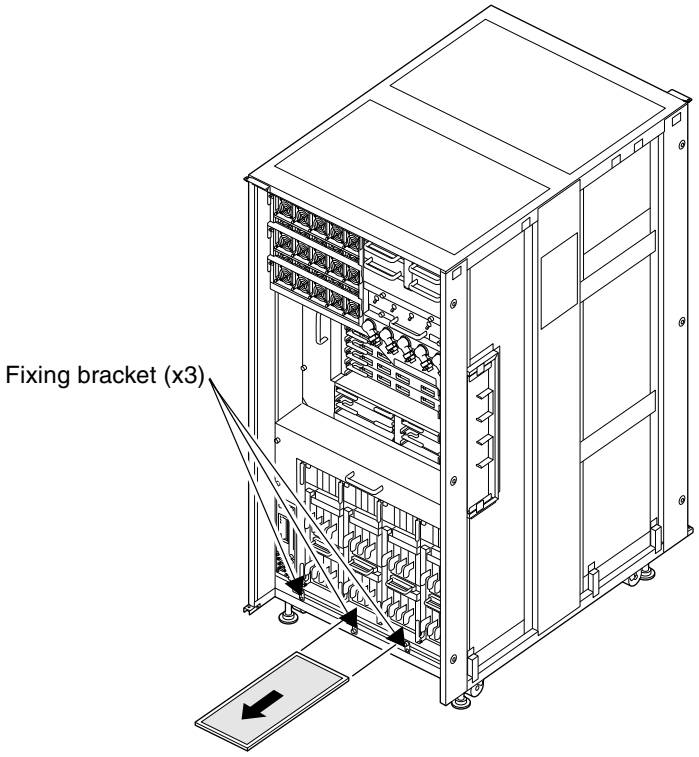


3. **Pull out all of the air filters.**
4. **Use a cleaner to remove dust from the air filters. Attach a brush to the tip of the cleaner, and clean both sides of the filters.**
5. **Restore each air filter to its original location and orientation, which means the knob is on the side closest to you and the arrow on the label points up (the latticework faces upward).**
6. **When this restoring work is completed for all the air filters, turn the fixing brackets of the air filters until they face upward, and then tighten the screws firmly with the Phillips screwdriver. Finally, close the front and rear doors of the SPARC Enterprise server.**

Removal of Air Filters

This filter cleaning procedure applies to both high-end servers.

FIGURE 3-2 Removing of Air Filters (Example Using the M9000 Base Cabinet)



3.3 Cleaning an Air Filter (I/O Unit)

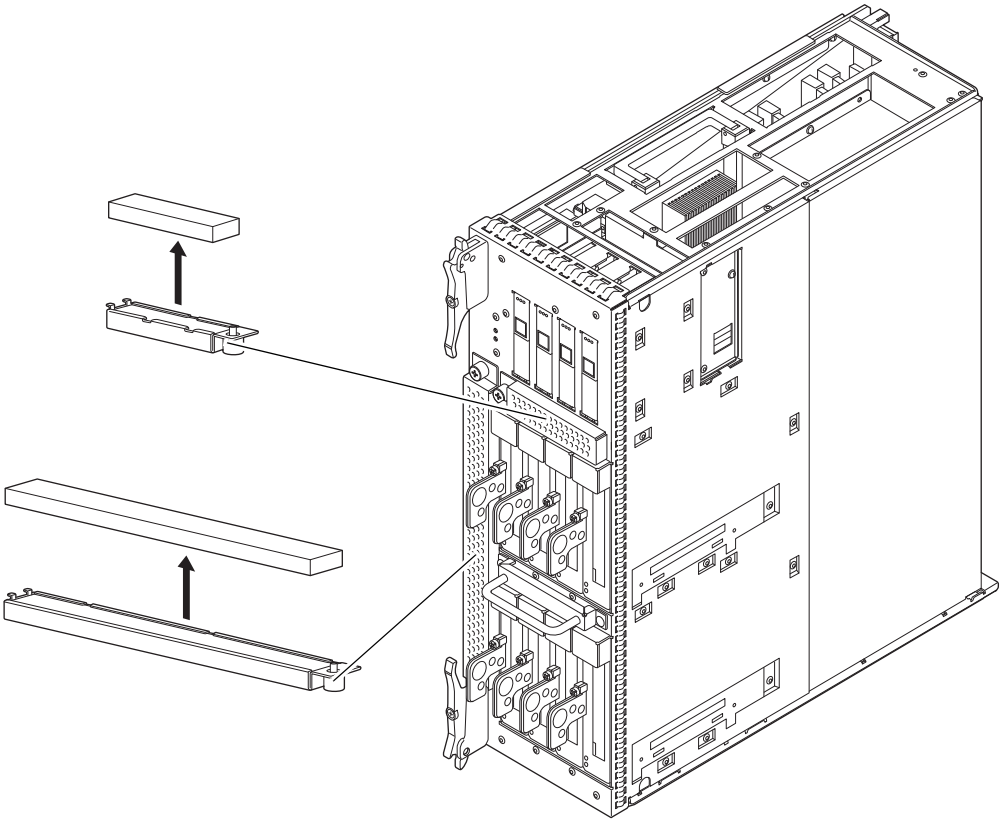
Each I/O unit has two air filters. Clean them at the same time that the air filters of the server are cleaned.

Caution – If you must use a vacuum cleaner for this work, use it outside the computer room. Do not use it inside the computer room. Using a vacuum cleaner inside the computer room may result in a server failure.

The cleaning procedure is as follows.

1. **Loosen the screws securing the filter cover, and remove the filter cover.**
2. **Pull out the air filter from the filter cover.**

FIGURE 3-3 Removing of Air Filters (I/O Unit)



3. **Use a vacuum cleaner to remove dust from the air filter.**
4. **After the cleaning is completed, follow the removal procedure in reverse order to mount it.**

CHAPTER 4

FRU Removal Preparation

This chapter explains the required basic operations for replacing components, in the following sections:

- Section 4.1, “Types of Replacement Procedures” on page 4-2
- Section 4.2, “Active Replacement” on page 4-3
- Section 4.3, “Hot Replacement” on page 4-12
- Section 4.4, “Cold Replacement” on page 4-18
- Section 4.5, “Power-On/Off of Main Line Switch” on page 4-24
- Section 4.6, “Emergency Switch-Off” on page 4-34
- Section 4.7, “Cable Routing of the SPARC Enterprise M8000 Server” on page 4-34

When actually performing the work of replacing a component, use the operator panel and the maintenance terminal by referring to the operator panel display, maintenance terminal display, and the LED display of the component.

Depending on the target component, the server must be powered off or a domain must be stopped.

For the LED display of each component, see Section 2.7, “LED Error Display” on page 2-30. Three replacement types are defined for judging whether power-off of the server or stopping a domain is necessary: active replacement, hot replacement, and cold replacement. See Part II, Maintenance. For information on the swapping types of each component, see Appendix B.

Note – Some of the XSCF functions have restrictions on their use. Register the necessary login privileges for each field engineer in advance. Field engineers cannot use functions that have not been registered for them. The system administrator sets and changes the users and their privileges. For details, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

Power-on and power-off of the server and emergency power-off are explained in the last part of this chapter.

- Section 4.5, “Power-On/Off of Main Line Switch” on page 4-24

■ Section 4.6, “Emergency Switch-Off” on page 4-34

4.1 Types of Replacement Procedures

4.1.1 FRU Replacement

The three types of replacement procedures explained below are supported for FRU replacement. Choose the most suitable replacement procedure according to the customer's system environment.

- Active replacement

A target FRU is operated while the Solaris OS of the domain to which the FRU belongs is operating. The target FRU is operated by using Solaris OS commands or XSCF commands. Because the power supply unit (PSU) and fan unit (FAN) do not belong to any domain, they are operated by using XSCF commands regardless of the operating state of the Solaris OS.

Note – The procedure for disconnecting a hard disk drive from the domain depends on whether disk mirroring software or similar support software is active. For details, see the related individual software manuals.

- Hot replacement

A target FRU is operated while the domain to which the FRU belongs is stopped. Depending on the target FRU, there are two cases as follows:

  - Operated with XSCF commands.
  - Operated directly, not by using XSCF commands.

- Cold replacement

After all the domains are stopped and then the server is powered off, a FRU is operated.

Note – Do not operate a target FRU while the OpenBoot PROM is running (the ok prompt is displayed). After stopping the relevant domain (power-off) or starting the Solaris OS, operate the target FRU.

4.2 Active Replacement

In active replacement the Solaris OS must be configured to allow the component to be replaced. Active replacement has four stages:

- Section 4.2.1, "Disconnecting a FRU from a Domain" on page 4-3
- Section 4.2.2, "Disconnecting and Replacing a FRU" on page 4-5
- Section 4.2.3, "Configuring a FRU into a Domain" on page 4-6
- Section 4.2.4, "Confirming the Hardware" on page 4-7

Note – If the hard disk drive is the boot device, it is necessary to replace it according to the cold replacement procedure. However, if the disk mirroring software or other support software can disconnect the relevant boot disk from Solaris OS, active replacement can be performed.

4.2.1 Disconnecting a FRU from a Domain

4.2.1.1 Disconnecting a CMU/IOU

Perform the following procedure to disconnect a CMU or IOU when the Solaris OS is operating:

1. **Checking resources**

   Check the resources that are connected to a CMU or IOU to be disconnected, and verify that the system is not affected when it is disconnected.

2. **Disconnecting from the domain**

   To disconnect the CMU or IOU from the domain, enter the following command from the terminal that is connected to the XSCF:

```
XSCF> deleteboard 01-0
```

   The system administrator permission is required for executing this command.

4.2.1.2 Disconnecting a PCI card

Caution – Before you remove the PCI cassette, make sure that there is no activity on the card in the cassette.

Caution – In the PCI cassette part, when removing cables such as LAN cable, if your finger can't reach the latch lock of the connector, press the latch with a flathead screwdriver to remove the cable. Forcing your finger into the clearance can cause damage to the PCI card.

1. **From the Solaris OS use the** `cfgadm` **command to get the component status:**

```
# cfgadm
AP_ID         Type         Receptacle   Occupant      Condition
...
iou#0-pci#1   unknown      empty        unconfigured  unknown
iou#0-pci#2   unknown      empty        unconfigured  unknown
iou#0-pci#3   etherne/hp   connected    configured    ok
iou#0-pci#4   fibre/hp     connected    configured    ok
```

   AP_ID is comprised of the IOU number (iou#0 or iou#1) and the PCI cassette slot number (pci#1, pci#2, pci#3, pci#4)

2. **Use the** `cfgadm` **command to unconfigure the component from the hardware:**

```
# cfgadm -c unconfigure AP_ID
```

   where AP_ID is the IOU and PCI card as shown in the output of cfgadm.

3. **Use the** `cfgadm` **command to stop supplying power to the component:**

```
# cfgadm -c disconnect AP_ID
```

   where AP_ID is the IOU and PCI card as shown in the output of cfgadm.

4. **Use the** `cfgadm` **command to confirm the component from the domain is now disconnected and unconfigured:**

```
# cfgadm
AP_ID         Type         Receptacle   Occupant      Condition
...
iou#0-pci#1   unknown      empty        unconfigured  unknown
iou#0-pci#2   unknown      empty        unconfigured  unknown
iou#0-pci#3   etherne/hp   disconnected unconfigured  ok
iou#0-pci#4   fibre/hp     connected    configured    ok
```

4.2.2 Disconnecting and Replacing a FRU

1. From the XSCF Shell prompt, use the `replacefru` command:

```
XSCF> replacefru
------------------------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. CMU/IOU(CPU Memory Board Unit/IO Unit)
2. FAN(Fan Unit)
3. PSU(Power Supply Unit)
4. XSCFU(Extended System Control Facility Unit)
5. DDC_A(DDC for BP_A)
------------------------------------------------------------------
Select [1-5|c:cancel] :
```

Note – DDC_A is displayed only for the M8000.

The command is menu-driven. The example continues using a FAN unit.

```
Select [1,2|c:cancel] :1

-----------------------------------------------------
Maintenance/Replacement Menu
Please select a FAN to be replaced.

No. FRU                Status
--- ---------------  ------------------
 1. FAN_A#0           Normal
 2. FAN_A#1           Normal
 3. FAN_A#2           Normal
 4. FAN_A#3           Normal
-----------------------------------------------------
Select [1-4|b:back] :1

You are about to replace FAN_A#0.
Do you want to continue?[r:replace|c:cancel] :r

Please confirm the Check LED is blinking.
If this is the case, please replace FAN_A#0.
After replacement has been completed, please select[f:finish] :f
```

The `replacefru` command will automatically test the status of the component after the disconnecting off and replace has finished.

```
Diagnostic tests for FAN_A#0 have started.
[This operation may take up to 2 minute(s)]
(progress scale reported in seconds)
    0.....  30.....  60.....  90.....done

------------------------------------------------
Maintenance/Replacement Menu
Status of the replaced unit.

FRU              Status
-------------   --------
FAN_A#0           Normal
------------------------------------------------
The replacement of FAN_A#0 has completed, normally.[f:finish] :f

------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. FAN          (Fan Unit)
2. PSU          (Power Supply Unit)
------------------------------------------------
Select [1,2|c:cancel] : C
XSCF>
```

When the tests are complete the program will return to the original menu. Select cancel to return to the XSCF Shell prompt.

Note – The display may vary depending on the XCP version.

4.2.3 Configuring a FRU into a Domain

4.2.3.1 Configuring CMU/IOU

Perform the following procedure to configure a CMU or IOU when the Solaris OS is operating:

1. **Configuring into a domain**

   To configure CMU or IOU into the domain, enter the following command from the terminal that is connected to the XSCF:

```
XSCF> addboard -c configure -d 0 00-0
```

   The system administrator permission is required for executing this command.

2. **Checking resources**

   Log in to the XSCF and execute the `showboard` command to verify that the target CMU or IOU has been correctly configured.

4.2.3.2 Configuring a PCI card

1. **From the Solaris OS, use the `cfgadm` command to configure and connect the component to the domain:**

```
# cfgadm -c configure AP_ID
```

   where AP_ID is the IOU and PCI card as shown in the output of cfgadm.

2. **Use the `cfgadm` command to confirm the component is now connected and configured:**

```
# cfgadm
AP_ID          Type         Receptacle   Occupant      Condition
..
iou#0-pci#1    unknown      empty        unconfigured  unknown
iou#0-pci#2    unknown      empty        unconfigured  unknown
iou#0-pci#3    etherne/hp   connected    configured    ok
iou#0-pci#4    fibre/hp     connected    configured    ok
```

4.2.4 Confirming the Hardware

1. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

   Unless "*" is displayed for a replacement CMU, CPU, or DIMM, it is operating normally.

Note – The display may vary depending on the XCP version.

For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

```
XSCF> showhardconf
SPARC Enterprise M9000;
    + Serial:PA30601004; Operator_Panel_Switch:Locked;
    + Power_Supply_System:Single-1Phase; Ex:Single-1Phase; SCF-ID:XSCF#0;
    + System_Power:On; System_Phase:Cabinet Power On;
    Domain#0 Domain_Status:Running;

    CMU#0 Status:Normal; Ver:0101h; Serial:PP0616B579  ;
        + FRU-Part-Number:CA06629-D001 A4                          ;
        + Memory_Size:128 GB;
        + Type:A
        CPUM#0-CHIP#0 Status:Normal; Ver:0101h; Serial:PP091505ZY  ;
            + FRU-Part-Number:CA06620-D021 A3                            ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        CPUM#1-CHIP#0 Status:Normal; Ver:0101h; Serial:PP091505ZW  ;
            + FRU-Part-Number:CA06620-D021 A3                            ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        CPUM#2-CHIP#0 Status:Normal; Ver:0101h; Serial:PP0915060H  ;
            + FRU-Part-Number:CA06620-D021 A3                            ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        CPUM#3-CHIP#0 Status:Normal; Ver:0101h; Serial:PP09150603  ;
            + FRU-Part-Number:CA06620-D021 A3                            ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        MEM#00A Status:Normal;
            + Code:7f7ffe00000000004aEBE41RE4ABHA-5C-E 3020-22211d88;
            + Type:4B; Size:4 GB;
        MEM#00B Status:Normal;
            + Code:7f7ffe00000000004aEBE41RE4ABHA-5C-E 3020-2a002a55;
            + Type:4B; Size:4 GB;
                :
        MEM#33A Status:Normal;
            + Code:ce0000000000000001M3 93T5168AZ0-CD5 3041-741a8ea1;
            + Type:4B; Size:4 GB;
        MEM#33B Status:Normal;
            + Code:ce0000000000000001M3 93T5168AZ0-CD5 3041-741a8ed3;
            + Type:4B; Size:4 GB;
                :
    CMU#2 Status:Normal; Ver:4201h; Serial:PP0618K472  ;
        + FRU-Part-Number:CA06620-D003 A0   /371-4617-01           ;
        + Memory_Size:32 GB;
        + Type:B
        CPUM#0-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0608J517  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01           ;
            + Freq:2.880 GHz; Type:32;
```

Output for the showhardconf command (Continued)

```
            + Core:4; Strand:2;
        CPUM#1-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0620P552  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        CPUM#2-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0631Q396  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        CPUM#3-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0629H443  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        MEM#00A Status:Normal;
            + Code:7f7ffe00000000004aEBE10RD4AGFA-5C-E 3020-221d6855;
            + Type:1A; Size:1 GB;
        MEM#00B Status:Normal;
            + Code:7f7ffe00000000004aEBE10RD4AGFA-5C-E 3020-221fcdb7;
            + Type:1A; Size:1 GB;
                :
        MEM#33A Status:Normal;
            + Code:7f7ffe00000000004aEBE10RD4AGFA-5C-E 3020-221d678b;
            + Type:1A; Size:1 GB;
        MEM#33B Status:Normal;
            + Code:2cffffffffffffff0818HTF12872Y-53EB3 0300-69aedd7a;
            + Type:1A; Size:1 GB;
                :
    IOU#0 Status:Normal; Ver:0101h; Serial:PP072102UN  ;
        + FRU-Part-Number:CA06620-D102 B1   /371-2217-02          ;
        PCI#0 Name_Property:pci; Card_Type:IOUA;
            + Serial:PP0611T826  ;
            + FRU-Part-Number:CA21126-B20X 002AB
    IOU#1 Status:Normal; Ver:0101h; Serial:PP072102UM  ;
        + FRU-Part-Number:CA06620-D102 B1   /371-2217-02          ;
        PCI#0 Name_Property:pci; Card_Type:IOUA;
            + Serial:PP0611T825  ;
            + FRU-Part-Number:CA21126-B20X 002AB
                :
    XSCFU_B#0 Status:Normal,Active; Ver:0201h; Serial:PP080600DW  ;
        + FRU-Part-Number:CA06620-D342 C0   /371-2228-02          ;
                :
    XBU_B#0 Status:Normal; Ver:0201h; Serial:PP0641X324  ;
        + FRU-Part-Number:CA06620-D301 A6                         ;
                :
    CLKU_B#0 Status:Normal; Ver:0101h; Serial:PP0542M679  ;
        + FRU-Part-Number:CA06629-D042 A1                         ;
                :
```

Output for the showhardconf command (Continued)

```
OPNL#0 Status:Normal; Ver:0101h; Serial:PP06058246  ;
    + FRU-Part-Number:CA06629-D061 A1                          ;
PSU#0 Status:Normal; Serial:;
    + FRU-Part-Number:CA01022-0690;
    + Power_Status:On;
            :
FANBP_A#0 Status:Normal; Ver:0101h; Serial:PP0607D266  ;
    + FRU-Part-Number:CA21123-B54X 003AC                       ;
    FAN_A#0 Status:Normal; Serial:PA0605B287;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
    FAN_A#15 Status:Normal; Serial:PA0605B303;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
FANBP_B#0 Status:Normal; Ver:0201h; Serial:PP0607D270  ;
    + FRU-Part-Number:CA21123-B55X 003AC                       ;
    FAN_A#4 Status:Normal; Serial:PA0605B297;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
    FAN_A#9 Status:Normal; Serial:PA0605B300;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
SWBP#0 Status:Normal; Ver:0101h; Serial:PP0607E759  ;
    + FRU-Part-Number:CA20394-B16X 001AA                       ;
MEDBP#0 Status:Normal; Ver:0101h; Serial:PP06058497  ;
    + FRU-Part-Number:CA20394-B17X 002AB                       ;
```

2. Verify the status LEDs on the PCI cassette.

The POWER LED should be lit and the CHECK LED should not be lit.

Note – If an XSCF failover occurs while executing the addfru, deletefru or replacefru command, the addition, removal or replacement of FRUs may not have been completed successfully. In such case, log in again to the active XSCF to confirm that the addition, removal or replacement of FRUs was successfully completed. If the addition, removal or replacement of the FRUs was not completed successfully, re-execute the following commands in the manner described:
- For addfru command execution, execute the deletefru command for the relevant FRU, and then re-execute the addfru command.
- For deletefru command execution, re-execute the deletefru command for the relevant FRU.
- For replacefru command execution, re-execute the replacefru command for the relevant FRU.

4.3 Hot Replacement

In hot replacement the Solaris OS does not need to be configured to allow the component to be replaced. The domain might need to be stopped and restarted in the case of CD-RW/DVD-RW drive unit or tape drive units.

- Section 4.3.1, "Disconnecting and Replacing a FRU" on page 4-12
- Section 4.3.2, "Confirming the Hardware" on page 4-15

4.3.1 Disconnecting and Replacing a FRU

1. **From the XSCF Shell prompt, specify the domain, and execute the** `poweroff` **command.**

   Example: In case you specify Domain ID 0

```
XSCF> poweroff -d 0
```

2. **From the XSCF Shell prompt, execute the** `replacefru` **command:**

```
XSCF> replacefru
--------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. CMU/IOU(CPU Memory Board Unit/IO Unit)
2. FAN(Fan Unit)
3. PSU(Power Supply Unit)
4. XSCFU(Extended System Control Facility Unit)
5. DDC_A(DDC for BP_A)
--------------------------------------------------
Select [1-5|c:cancel] :
```

Note – DDC_A is displayed only for the M8000.

The command is menu-driven. The example continues using a FAN unit.

```
Select [1,2|c:cancel] :1

------------------------------------------------
Maintenance/Replacement Menu
Please select a FAN to be replaced.

No. FRU                Status
--- ---------------  ------------------
 1. FAN_A#0            Normal
 2. FAN_A#1            Normal
 3. FAN_A#2            Normal
 4. FAN_A#3            Normal
------------------------------------------------
Select [1-4|b:back] :1

You are about to replace FAN_A#0.
Do you want to continue?[r:replace|c:cancel] :r

Please confirm the Check LED is blinking.
If this is the case, please replace FAN_A#0.
After replacement has been completed, please select[f:finish] :f
```

The `replacefru` command will automatically test the status of the component after the disconnecting off and replace has finished.

```
Diagnostic tests for FAN_A#0 have started.
[This operation may take up to 2 minute(s)]
(progress scale reported in seconds)
    0.....  30.....  60.....  90.....done

------------------------------------------------
Maintenance/Replacement Menu
Status of the replaced unit.

FRU               Status
-------------    --------
FAN_A#0           Normal
------------------------------------------------
The replacement of FAN_A#0 has completed, normally.[f:finish] :f

------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. FAN          (Fan Unit)
2. PSU          (Power Supply Unit)
------------------------------------------------
Select [1,2|c:cancel] : C
XSCF>
```

When the tests are complete the program will return to the original menu. Select cancel to return to the XSCF Shell prompt.

Note – The display may vary depending on the XCP version.

4.3.2 Confirming the Hardware

1. **Use the** `showhardconf` **command to confirm the new component has been installed:**

```
XSCF> showhardconf
SPARC Enterprise M9000;
    + Serial:PA30601004; Operator_Panel_Switch:Locked;
    + Power_Supply_System:Single-1Phase; Ex:Single-1Phase; SCF-ID:XSCF#0;
    + System_Power:On; System_Phase:Cabinet Power On;
    Domain#0 Domain_Status:Running;

    CMU#0 Status:Normal; Ver:0101h; Serial:PP0616B579  ;
        + FRU-Part-Number:CA06629-D001 A4                          ;
        + Memory_Size:128 GB;
        + Type:A
        CPUM#0-CHIP#0 Status:Normal; Ver:0101h; Serial:PP091505ZY  ;
            + FRU-Part-Number:CA06620-D021 A3                          ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        CPUM#1-CHIP#0 Status:Normal; Ver:0101h; Serial:PP091505ZW  ;
            + FRU-Part-Number:CA06620-D021 A3                          ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        CPUM#2-CHIP#0 Status:Normal; Ver:0101h; Serial:PP0915060H  ;
            + FRU-Part-Number:CA06620-D021 A3                          ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        CPUM#3-CHIP#0 Status:Normal; Ver:0101h; Serial:PP09150603  ;
            + FRU-Part-Number:CA06620-D021 A3                          ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        MEM#00A Status:Normal;
            + Code:7f7ffe00000000004aEBE41RE4ABHA-5C-E 3020-22211d88;
            + Type:4B; Size:4 GB;
        MEM#00B Status:Normal;
            + Code:7f7ffe00000000004aEBE41RE4ABHA-5C-E 3020-2a002a55;
            + Type:4B; Size:4 GB;
                :
        MEM#33A Status:Normal;
            + Code:ce00000000000000001M3 93T5168AZ0-CD5 3041-741a8ea1;
            + Type:4B; Size:4 GB;
        MEM#33B Status:Normal;
            + Code:ce00000000000000001M3 93T5168AZ0-CD5 3041-741a8ed3;
            + Type:4B; Size:4 GB;
                :
    CMU#2 Status:Normal; Ver:4201h; Serial:PP0618K472  ;
        + FRU-Part-Number:CA06620-D003 A0   /371-4617-01           ;
```

Output for the showhardconf command (Continued)

```
        + Memory_Size:32 GB;
        + Type:B
        CPUM#0-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0608J517  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        CPUM#1-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0620P552  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        CPUM#2-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0631Q396  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        CPUM#3-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0629H443  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        MEM#00A Status:Normal;
            + Code:7f7ffe00000000004aEBE10RD4AGFA-5C-E 3020-221d6855;
            + Type:1A; Size:1 GB;
        MEM#00B Status:Normal;
            + Code:7f7ffe00000000004aEBE10RD4AGFA-5C-E 3020-221fcdb7;
            + Type:1A; Size:1 GB;
                :
        MEM#33A Status:Normal;
            + Code:7f7ffe00000000004aEBE10RD4AGFA-5C-E 3020-221d678b;
            + Type:1A; Size:1 GB;
        MEM#33B Status:Normal;
            + Code:2cffffffffffffff0818HTF12872Y-53EB3 0300-69aedd7a;
            + Type:1A; Size:1 GB;
                :
    IOU#0 Status:Normal; Ver:0101h; Serial:PP072102UN  ;
        + FRU-Part-Number:CA06620-D102 B1   /371-2217-02          ;
        PCI#0 Name_Property:pci; Card_Type:IOUA;
            + Serial:PP0611T826  ;
            + FRU-Part-Number:CA21126-B20X 002AB
    IOU#1 Status:Normal; Ver:0101h; Serial:PP072102UM  ;
        + FRU-Part-Number:CA06620-D102 B1   /371-2217-02          ;
        PCI#0 Name_Property:pci; Card_Type:IOUA;
            + Serial:PP0611T825  ;
            + FRU-Part-Number:CA21126-B20X 002AB
                :
    XSCFU_B#0 Status:Normal,Active; Ver:0201h; Serial:PP080600DW  ;
        + FRU-Part-Number:CA06620-D342 C0   /371-2228-02          ;
                :
```

Output for the showhardconf command (Continued)

```
XBU_B#0 Status:Normal; Ver:0201h; Serial:PP0641X324  ;
    + FRU-Part-Number:CA06620-D301 A6                          ;
            :
CLKU_B#0 Status:Normal; Ver:0101h; Serial:PP0542M679  ;
    + FRU-Part-Number:CA06629-D042 A1                          ;
            :
OPNL#0 Status:Normal; Ver:0101h; Serial:PP06058246  ;
    + FRU-Part-Number:CA06629-D061 A1                          ;
PSU#0 Status:Normal; Serial:;
    + FRU-Part-Number:CA01022-0690;
    + Power_Status:On;
            :
FANBP_A#0 Status:Normal; Ver:0101h; Serial:PP0607D266  ;
    + FRU-Part-Number:CA21123-B54X 003AC                       ;
    FAN_A#0 Status:Normal; Serial:PA0605B287;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
    FAN_A#15 Status:Normal; Serial:PA0605B303;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
FANBP_B#0 Status:Normal; Ver:0201h; Serial:PP0607D270  ;
    + FRU-Part-Number:CA21123-B55X 003AC                       ;
    FAN_A#4 Status:Normal; Serial:PA0605B297;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
    FAN_A#9 Status:Normal; Serial:PA0605B300;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
SWBP#0 Status:Normal; Ver:0101h; Serial:PP0607E759  ;
    + FRU-Part-Number:CA20394-B16X 001AA                       ;
MEDBP#0 Status:Normal; Ver:0101h; Serial:PP06058497  ;
    + FRU-Part-Number:CA20394-B17X 002AB                       ;
```

Refer to the showhardconf man page for more information.

2. Verify the indicator LEDs on the FRU.

Refer to TABLE 2-11 and TABLE 2-12 for LED status.

Note – For notes to observe when executing the `addfru`, `deletefru` or `replacefru` command, see Section 4.2.4, “Confirming the Hardware” on page 4-7.

4.4 Cold Replacement

In cold replacement all business operations are stopped. Cold replacement is the act of powering off the server and disconnecting input power. This is normally required for safety when the inside of the server is accessed. The work of cold replacement consists of the following three steps:

- Section 4.4.1, "Powering the Server Off" on page 4-18
- Section 4.4.2, "Powering the Server On" on page 4-19
- Section 4.4.3, "Confirming the Hardware" on page 4-20

4.4.1 Powering the Server Off

Two power-off procedures are available.

From the Operator Panel

Follow the power-off procedure below.

1. **Confirm that the mode switch on the operator panel is set to the Service position.**
2. **Confirm that the POWER LED and CHECK LED on the operator panel are lit and the XSCF LED on the operator panel is off.**
3. **When the XSCF LED is lit, see** Section 2.7, "LED Error Display" on page 2-30 **to identify the cause and give preference to these functions.**
4. **Press and hold down the POWER switch on the operator panel for at least four seconds.**
5. **Check the POWER LED. When it turns off, the power-off procedure is completed.**

   If the state of any of the LEDs is different from the above, see Section 2.7, "LED Error Display" on page 2-30

From the Maintenance Terminal

Follow the power-off procedure below using the XSCF maintenance functions.

1. **Notify users that the server is going down.**

2. **Back up the system files and data as necessary.**

3. **Log into the XSCF Shell and type the `poweroff` command**

```
XSCF> poweroff -a
```

The following activities occur when the `poweroff` command is used:

- The Solaris OS shuts down cleanly.
- The server powers off to Standby mode (the XSCF Unit and one fan will still have power).

For details of the command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

4. **Switch off all main line switches of the AC section.**

Caution – There is an electrical hazard if the power cords are not disconnected. All power cords must be disconnected to completely remove power from the server.

4.4.2 Powering the Server On

Two power-on procedures are available.

4.4.2.1 From the Operator Panel

Follow the power-on procedure below.

1. **Confirm that the mode switch on the operator panel is set to the Service position.**

2. **Confirm that the POWER LED and CHECK LED on the operator panel are off and the XSCF LED on the operator panel is lit.**

3. **If the XSCF LED is off, switch on all the system main line switches.**

4. **Press and hold down (for less than four seconds) the POWER switch on the operator panel.**

5. **Check the POWER LED.**

   When it becomes lit, the power-on procedure is completed.

   If the state of any of the LEDs is different from the above, see Section 2.7, "LED Error Display" on page 2-30.

4.4.2.2 From the Maintenance Terminal

Follow the power-on procedure below using the XSCF maintenance functions.

1. **Make sure that the server has enough power supply units to run the desired configuration.**
2. **Switch on all main line switches of the AC section.**
3. **Make sure the XSCF Unit Ready LED is lit.**
4. **Log into the XSCF Shell and type the** `poweron` **command.**

```
XSCF> poweron
```

   Refer to the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide* for details.

5. **After a delay the following activities occur:**
   - The operator panel Active LED will light.
   - The system will execute the power-on self-test (POST).

   Then, the server is completely powered on.
6. **Turn the keyswitch on the operator panel to the Locked position.**

4.4.3 Confirming the Hardware

1. **Use the** `showhardconf` **command to confirm the new component has been installed:**

```
XSCF> showhardconf
SPARC Enterprise M9000;
    + Serial:PA30601004; Operator_Panel_Switch:Locked;
    + Power_Supply_System:Single-1Phase; Ex:Single-1Phase; SCF-ID:XSCF#0;
    + System_Power:On; System_Phase:Cabinet Power On;
    Domain#0 Domain_Status:Running;

    CMU#0 Status:Normal; Ver:0101h; Serial:PP0616B579  ;
        + FRU-Part-Number:CA06629-D001 A4                          ;
        + Memory_Size:128 GB;
        + Type:A
        CPUM#0-CHIP#0 Status:Normal; Ver:0101h; Serial:PP091505ZY  ;
            + FRU-Part-Number:CA06620-D021 A3                          ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        CPUM#1-CHIP#0 Status:Normal; Ver:0101h; Serial:PP091505ZW  ;
            + FRU-Part-Number:CA06620-D021 A3                          ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        CPUM#2-CHIP#0 Status:Normal; Ver:0101h; Serial:PP0915060H  ;
            + FRU-Part-Number:CA06620-D021 A3                          ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        CPUM#3-CHIP#0 Status:Normal; Ver:0101h; Serial:PP09150603  ;
            + FRU-Part-Number:CA06620-D021 A3                          ;
            + Freq:2.280 GHz; Type:16;
            + Core:2; Strand:2;
        MEM#00A Status:Normal;
            + Code:7f7ffe00000000004aEBE41RE4ABHA-5C-E 3020-22211d88;
            + Type:4B; Size:4 GB;
        MEM#00B Status:Normal;
            + Code:7f7ffe00000000004aEBE41RE4ABHA-5C-E 3020-2a002a55;
            + Type:4B; Size:4 GB;
                :
        MEM#33A Status:Normal;
            + Code:ce0000000000000001M3 93T5168AZ0-CD5 3041-741a8ea1;
            + Type:4B; Size:4 GB;
        MEM#33B Status:Normal;
            + Code:ce0000000000000001M3 93T5168AZ0-CD5 3041-741a8ed3;
            + Type:4B; Size:4 GB;
                :
    CMU#2 Status:Normal; Ver:4201h; Serial:PP0618K472  ;
        + FRU-Part-Number:CA06620-D003 A0   /371-4617-01          ;
        + Memory_Size:32 GB;
        + Type:B
```

Output for the showhardconf command (Continued)

```
        CPUM#0-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0608J517  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        CPUM#1-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0620P552  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        CPUM#2-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0631Q396  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        CPUM#3-CHIP#0 Status:Normal; Ver:0901h; Serial:PP0629H443  ;
            + FRU-Part-Number:CA06620-D051 A0   /371-4616-01          ;
            + Freq:2.880 GHz; Type:32;
            + Core:4; Strand:2;
        MEM#00A Status:Normal;
            + Code:7f7ffe00000000004aEBE10RD4AGFA-5C-E 3020-221d6855;
            + Type:1A; Size:1 GB;
        MEM#00B Status:Normal;
            + Code:7f7ffe00000000004aEBE10RD4AGFA-5C-E 3020-221fcdb7;
            + Type:1A; Size:1 GB;
                :
        MEM#33A Status:Normal;
            + Code:7f7ffe00000000004aEBE10RD4AGFA-5C-E 3020-221d678b;
            + Type:1A; Size:1 GB;
        MEM#33B Status:Normal;
            + Code:2cffffffffffffff0818HTF12872Y-53EB3 0300-69aedd7a;
            + Type:1A; Size:1 GB;
                :
    IOU#0 Status:Normal; Ver:0101h; Serial:PP072102UN  ;
        + FRU-Part-Number:CA06620-D102 B1   /371-2217-02          ;
        PCI#0 Name_Property:pci; Card_Type:IOUA;
            + Serial:PP0611T826  ;
            + FRU-Part-Number:CA21126-B20X 002AB
    IOU#1 Status:Normal; Ver:0101h; Serial:PP072102UM  ;
        + FRU-Part-Number:CA06620-D102 B1   /371-2217-02          ;
        PCI#0 Name_Property:pci; Card_Type:IOUA;
            + Serial:PP0611T825  ;
            + FRU-Part-Number:CA21126-B20X 002AB
                :
    XSCFU_B#0 Status:Normal,Active; Ver:0201h; Serial:PP080600DW  ;
        + FRU-Part-Number:CA06620-D342 C0   /371-2228-02          ;
                :
```

Output for the showhardconf command (Continued)

```
XBU_B#0 Status:Normal; Ver:0201h; Serial:PP0641X324  ;
    + FRU-Part-Number:CA06620-D301 A6                          ;
            :
CLKU_B#0 Status:Normal; Ver:0101h; Serial:PP0542M679  ;
    + FRU-Part-Number:CA06629-D042 A1                          ;
            :
OPNL#0 Status:Normal; Ver:0101h; Serial:PP06058246  ;
    + FRU-Part-Number:CA06629-D061 A1                          ;
PSU#0 Status:Normal; Serial:;
    + FRU-Part-Number:CA01022-0690;
    + Power_Status:On;
            :
FANBP_A#0 Status:Normal; Ver:0101h; Serial:PP0607D266  ;
    + FRU-Part-Number:CA21123-B54X 003AC                       ;
    FAN_A#0 Status:Normal; Serial:PA0605B287;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
    FAN_A#15 Status:Normal; Serial:PA0605B303;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
FANBP_B#0 Status:Normal; Ver:0201h; Serial:PP0607D270  ;
    + FRU-Part-Number:CA21123-B55X 003AC                       ;
     FAN_A#4 Status:Normal; Serial:PA0605B297;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
   FAN_A#9 Status:Normal; Serial:PA0605B300;
        + FRU-Part-Number:CA06501-D023 A2   /371-2222-00           ;
            :
SWBP#0 Status:Normal; Ver:0101h; Serial:PP0607E759  ;
    + FRU-Part-Number:CA20394-B16X 001AA                       ;
MEDBP#0 Status:Normal; Ver:0101h; Serial:PP06058497  ;
    + FRU-Part-Number:CA20394-B17X 002AB                       ;
```

Refer to the showhardconf man page for more information.

2. Verify the state of the status LEDs on the FRU.

Refer to TABLE 2-11 and TABLE 2-12 for LED status.

4.5 Power-On/Off of Main Line Switch

4.5.1 Types of Power Supply

TABLE 4-1 shows how the components of the server vary depending on the type of power supply. For details on the electrical specifications, see the *SPARC Enterprise M8000/M9000 Servers Site Planning Guide*.

TABLE 4-1 Types of Power Supply and the Components of the Server

	Types of power supply			Reference diagram
Model	**AC input power**	**Single/Dual power**	**Components of the server**	
M8000	Single-phase	Single power	Single-phase power feed option	See FIGURE 4-4.
	Single-phase	Dual power	Rack-mountable dual power feed option	See FIGURE 4-5.
	Three-phase	Dual power	Power cabinet + three-phase power feed option	See FIGURE 4-6.
M9000	Single-phase	Single power	Single-phase power feed option	See FIGURE 4-7.
	Single-phase	Dual power	Power cabinet + single-phase power feed option	See FIGURE 4-8.
	Three-phase	Dual power	Power cabinet + three-phase power feed option	See FIGURE 4-9.

Note – When you choose three-phase power feed option, the dual power feed option is always included.

4.5.1.1 AC Input Power

There are two types of AC input power: single-phase and three-phase.

FIGURE 4-1 and FIGURE 4-2 show how the power supplied from the external AC power supply (distribution panel) runs through in the server. The power input from the distribution panel is supplied to the main line switch, the switch (in case of three-phase power feed), and the power supply unit.

FIGURE 4-1 Internal Connection of Power Supply (Single-Phase Power Feed)

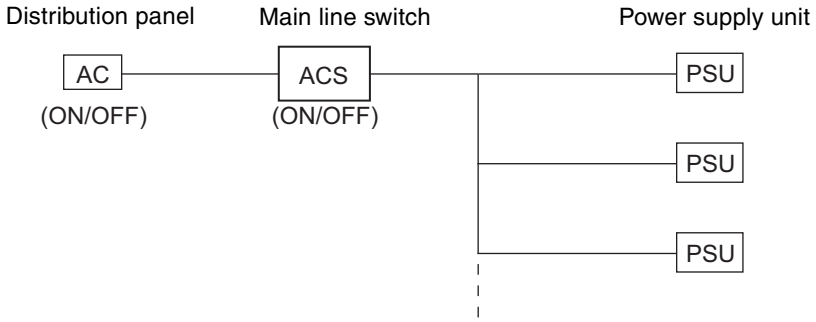
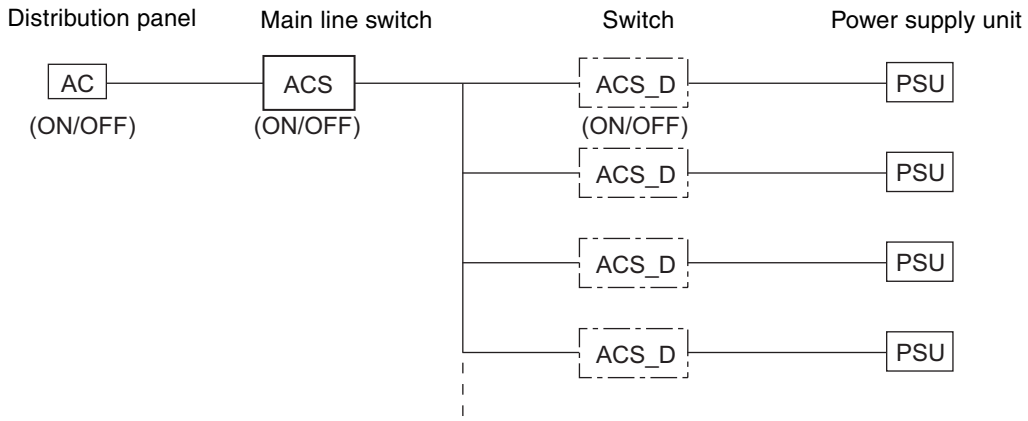


FIGURE 4-2 Internal Connection of Power Supply (Three-Phase Power Feed)



To use three-phase power feed, you need the three-phase power feed option and the power cabinet for mounting the power supply.

In case of three-phase power feed, AC section is not located in the SPARC Enterprise server cabinet. The AC section for the three-phase power feed is located in the power cabinet.

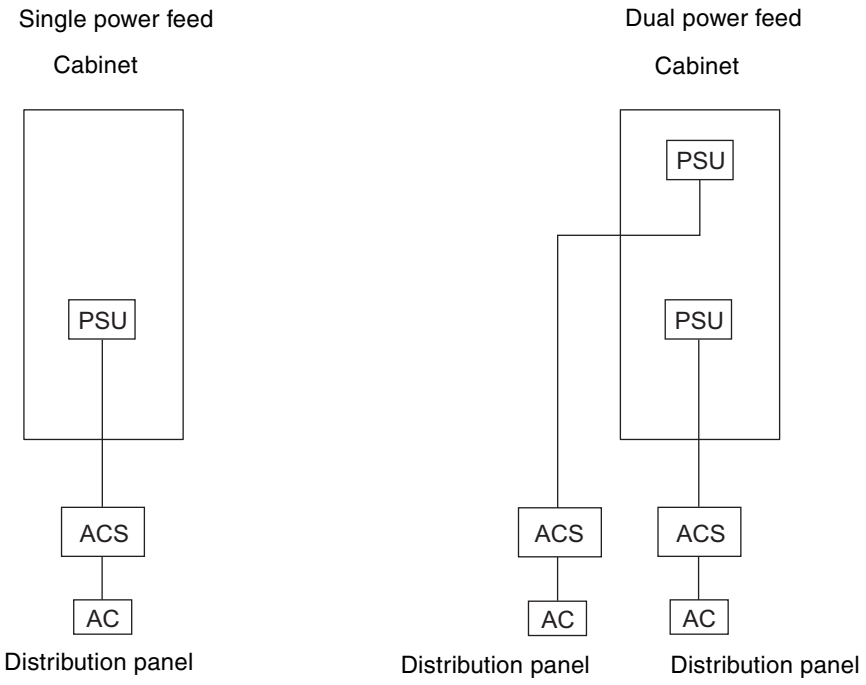
Two types of options are available for three-phase power feed, the star connection and the delta connection: the star connection option has two sorts of connections, connection for the neutral line and connections for phases, and the delta connection option has connections for phases. For details, see the *SPARC Enterprise M8000/M9000 Servers Site Planning Guide*.

4.5.1.2 Power System

There are two types of power system: single power and dual power.

FIGURE 4-3 shows the conceptual diagram of power system.

FIGURE 4-3 Power System (Single Power / Dual Power)



The dual power feed option receives power from two external AC power sources that are independent of each other, and it duplicates the input power system.

The dual power feed can be used with either single-phase or three-phase power feed.

4.5.2 Power-On/Off Procedures of Main Line Switch

On the server with expansion cabinet, when you turn on or turn off the main line switch, do not fail to follow the order described below.

4.5.2.1 Power-On

1. **Turn on all the main line switches of the expansion cabinet.**

   If an optional power cabinet is connected, also turn on all the main line switches of the power cabinet.

2. **Turn on all the main line switches of the base cabinet.**

   If an optional power cabinet is connected, also turn on all the main line switches of the power cabinet.

4.5.2.2 Power-Off

1. **Turn off all the main line switches of the base cabinet.**

   If an optional power cabinet is connected, also turn off all the main line switches of the power cabinet. (Note)

2. **Turn off all the main line switches of the expansion cabinet.**

Note – Please wait at least 30 seconds before turning on the system power that you turned off, by using the main line switch or the circuit breakers on the distribution panel.

4.5.3 Main Line Switch Locations

This section describes the locations of main line switch for each type of power supply. (See FIGURE 4-4 through FIGURE 4-9)

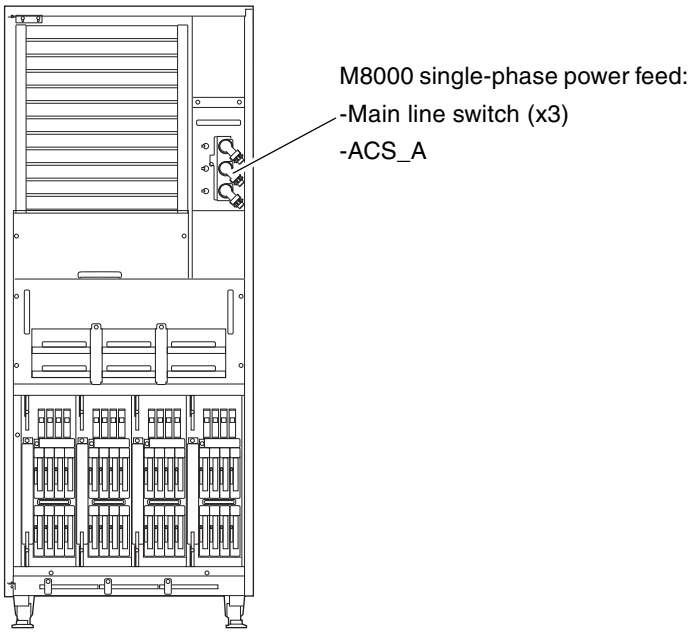
A power cabinet is required when using the dual power feed option. However, in the case of the SPARC Enterprise M8000 server single-phase and dual power feed, the power cabinet is not required because the rack-mountable dual power feed option is mounted in the SPARC Enterprise M8000 server cabinet (See FIGURE 4-5).

In the case of the SPARC Enterprise M9000 server single-phase and dual power feed, main line switches are mounted in both the SPARC Enterprise server cabinet and the power cabinet (See FIGURE 4-8).

In the case of the three-phase dual power feed, the main line switch is located in the power cabinet (See FIGURE 4-6 and FIGURE 4-9).

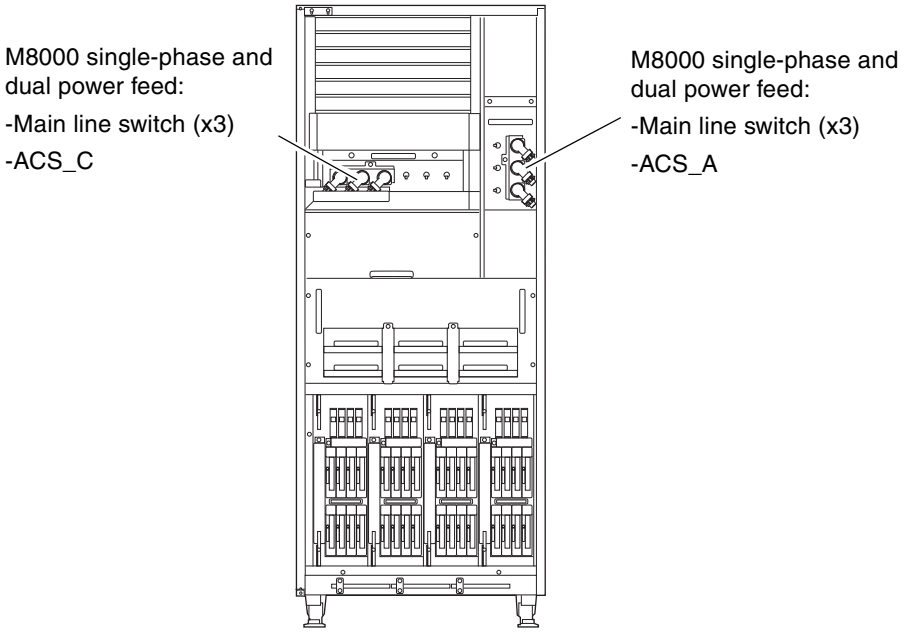
4.5.3.1 SPARC Enterprise M8000 Server Single-Phase Power Feed

FIGURE 4-4 Main Line Switch Locations (Rear of the M8000)



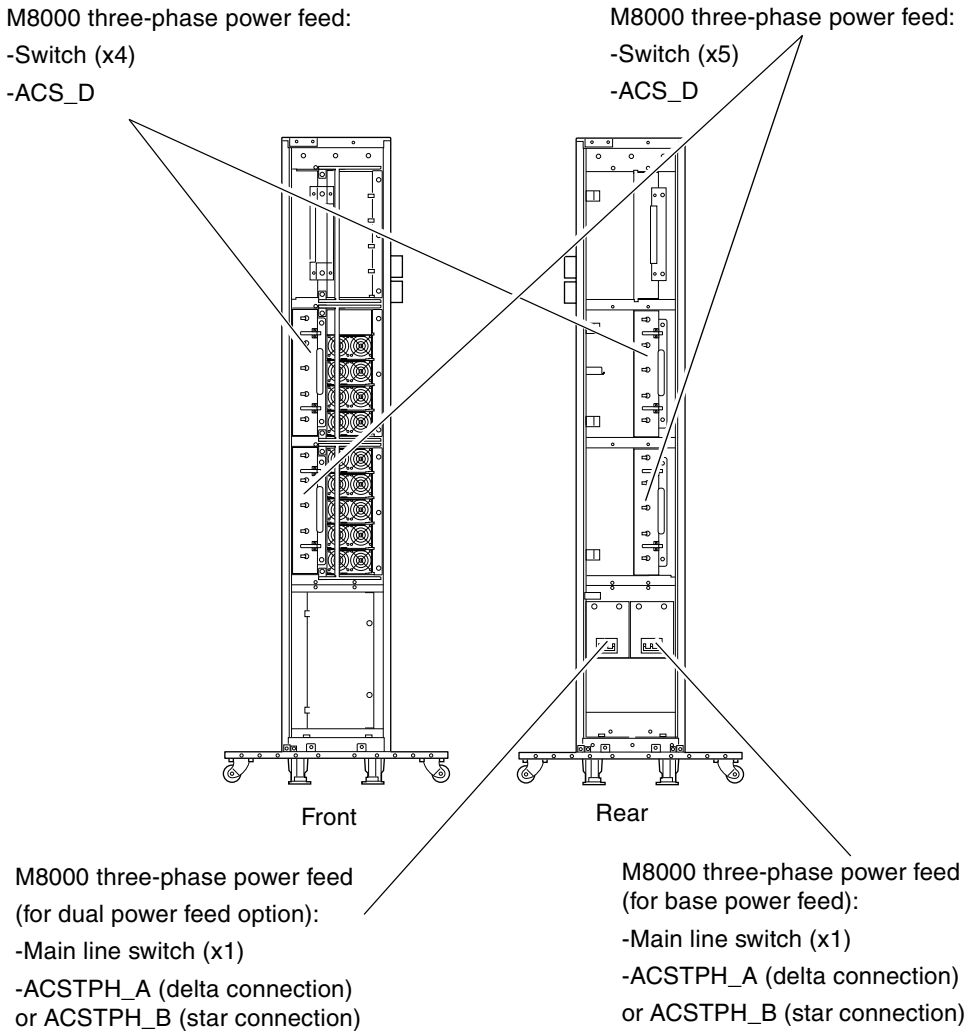
4.5.3.2 SPARC Enterprise M8000 Server Single-Phase and Dual Power Feed

FIGURE 4-5 Main Line Switch Locations (Rear of the M8000)



4.5.3.3 SPARC Enterprise M8000 Server Three-Phase Power Feed

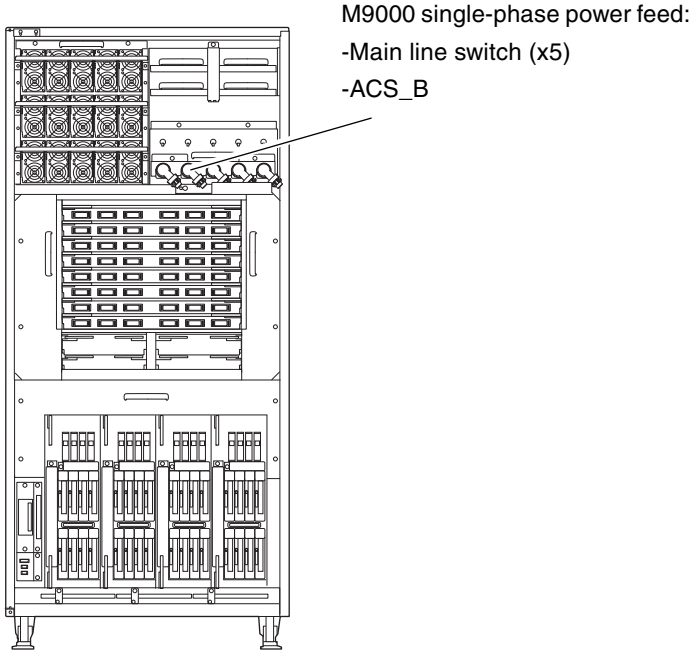
FIGURE 4-6 Main Line Switch Locations (Power Cabinet)



Note – Same type of switch is used for main line switches in base cabinet and power cabinet on a system with three-phase dual power feed.

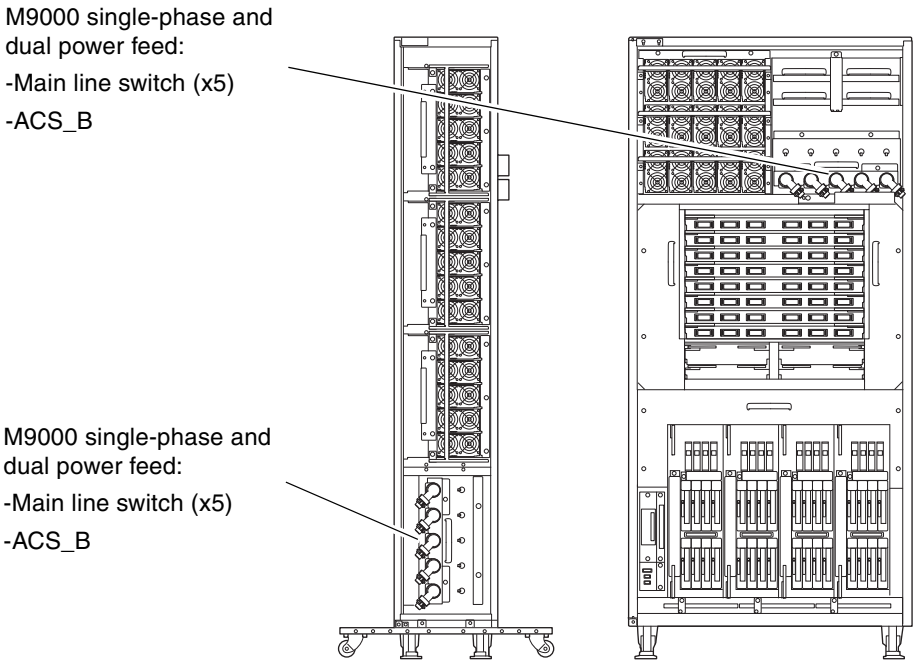
4.5.3.4 SPARC Enterprise M9000 Server Single-Phase Power Feed

FIGURE 4-7 Main Line Switch Locations (Front of the M9000)



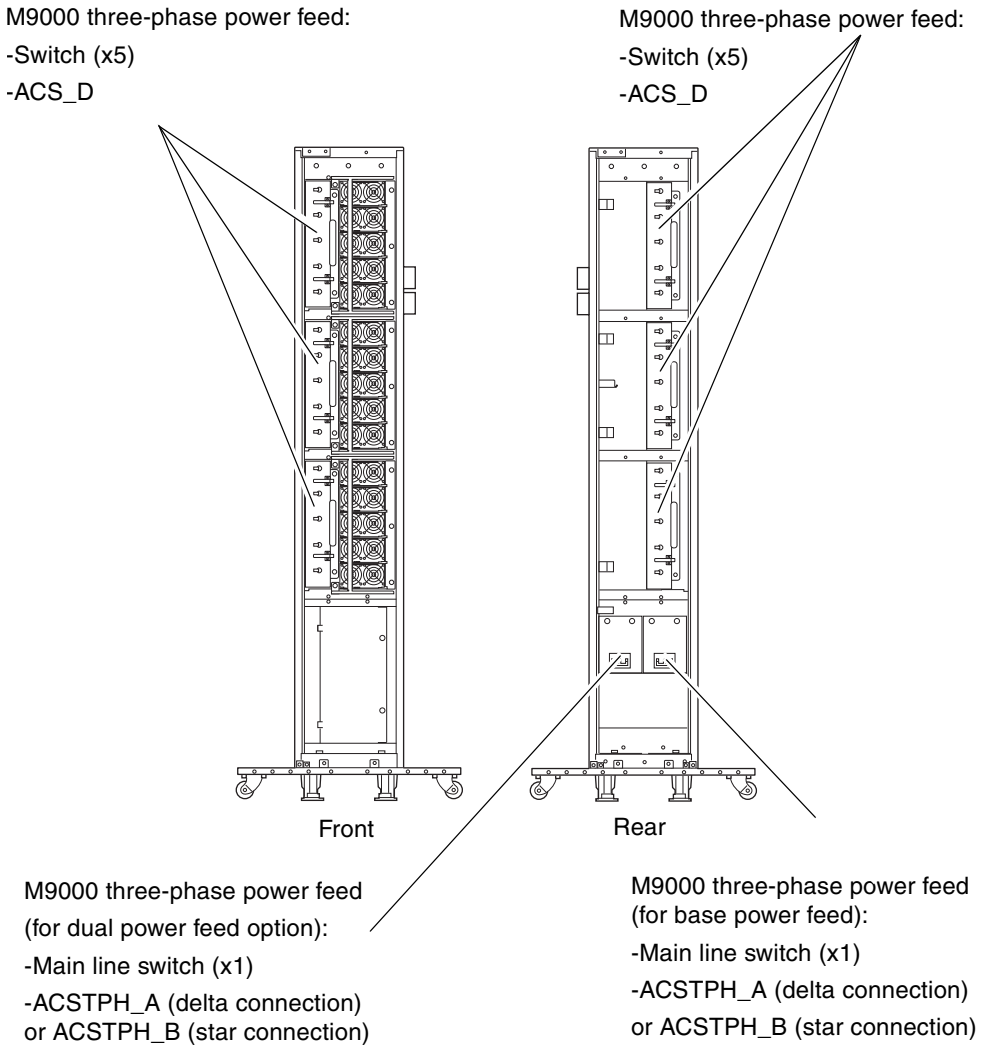
4.5.3.5 SPARC Enterprise M9000 Server Single-Phase and Dual Power Feed

FIGURE 4-8 Main Line Switch Locations (Front of the Power Cabinet + M9000)



4.5.3.6 SPARC Enterprise M9000 Server Three-Phase Power Feed

FIGURE 4-9 Main Line Switch Locations (Power Cabinet)



Note – Same type of switch is used for main line switches in base cabinet and power cabinet on a system with three-phase dual power feed.

4.6 Emergency Switch-Off

In emergency situations (such as smoke or flames are coming from the server), you need to immediately stop the use and turn off the power supply.

Caution – If smoke or flames are coming from the server, switch off all main line switches immediately, or use the customer's distribution panel to immediately stop the power supply. Regardless of the job at hand, remember to give top priority to fire prevention.

4.7 Cable Routing of the SPARC Enterprise M8000 Server

In the rack space for the SPARC Enterprise M8000 server, when a 19-inch unit such as the external I/O expansion unit mounted besides the rack-mountable dual power feed, the cables connected to the unit must be properly routed.

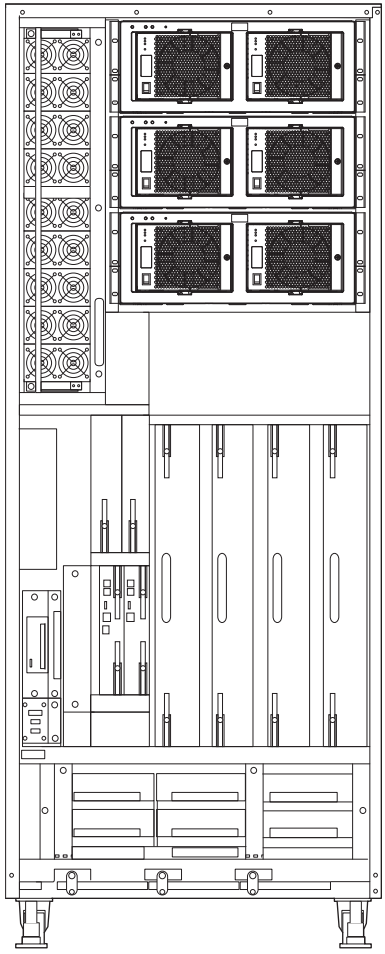
This section provides an example of the cable routing when the external I/O expansion unit mounted. Perform the cable routing properly with reference to this section while following the precautions.

To do maintenance on the I/O Unit or the FAN unit, you need the cable routing in the same manner. See Chapter 7 and Chapter 8.

4.7.1 Cable Routing When the External I/O Expansion Unit Mounted

FIGURE 4-10 shows the example of the external I/O expansion units mounted in the rack space. Up to 3 external I/O expansion units can be mounted in the rack space for the SPARC Enterprise M8000 server. Follow the precautions below when routing the cables.

FIGURE 4-10 Example of the External I/O Expansion Units Mounted in the Rack Space for the SPARC Enterprise M8000 Server (front)



4.7.1.1 Precautions For Cable Routing

Note – In principle, run LAN cables to the external I/O expansion units along the route on the right side of the rack (right route). If the total number of LAN cables exceeds 72, place only 72 of the LAN cables along the right route, and place the remaining LAN cables along the route on the left side of the rack (left route).

Note – The SPARC Enterprise M8000 server comes with 22 short hook-and-loop fasteners and 4 long hook-and-loop fasteners for cables. Use the type of hook-and-loop fastener appropriate to the situation.

Note – To do maintenance on the IOU or the FAN unit of the SPARC Enterprise M8000 server, push aside the cables.

Caution – Do not place any cable over a PCI cassette at the front of an IOU in the SPARC Enterprise M8000 server. (Adjust the positioning to divide and bundle the cables.)

Caution – Take care to prevent the cables from blocking the ventilation slits of the SPARC Enterprise M8000 server. (Fujitsu recommends running the cables above the handle of the FAN unit.)

Caution – Keep optical fiber cables as far apart from other cables as possible to prevent the optical fiber cables from being covered by the other cables.

Caution – Fasten the bundles of cables with the attached hook-and-loop fastener to the SPARC Enterprise M8000 server, while avoiding the following locations which may affect the system operation:
- The handle or the lever of the AC section
- The handle of the FAN unit
- The handle or the lever of the IOU
- The lever of the PCI cassette

Caution – When bending a cable, keep its bending radius within the permissible bending radius.

Caution – Take sufficient care not to touch the main line switch when laying cables.

4.7.1.2 When Three External I/O Expansion Units Mounted

This section provides an example of the cable routing procedure applied when three external I/O expansion units are mounted in the rack space for the SPARC Enterprise M8000 server.

Cable Routing Procedure

The cable routing procedure explained below is an example of the recommended procedure.

This section explains the recommended cable routing procedure in an example using a configuration in which three external I/O expansion units are mounted and 34 LAN cables are connected to each external I/O expansion unit.

When actually routing cables, perform the work properly with reference to this procedure while following the precautions for cable routing.

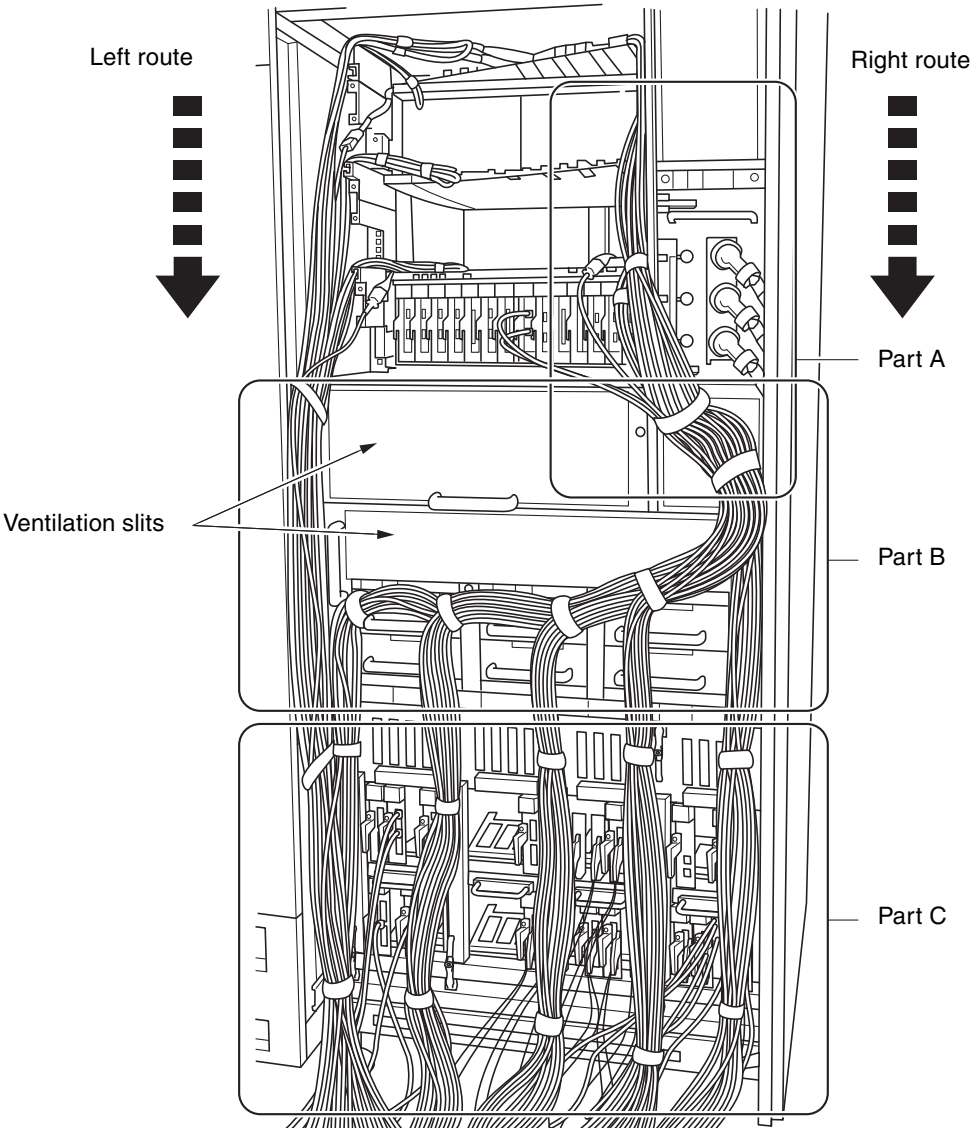
Hook-and-loop Fasteners Used

This procedure specifies only the short and long hook-and-loop fasteners recommended for use. During actual cable routing, use the type of hook-and-loop fastener appropriate for the number of cables to be bound.

1. **Run 72 LAN cables (of the cables connected to the external I/O expansion units) along the right route.**

2. Run the remaining cables along the left route.

FIGURE 4-11 Cable Routing When Three External I/O Expansion Units Mounted (M8000, rear view)



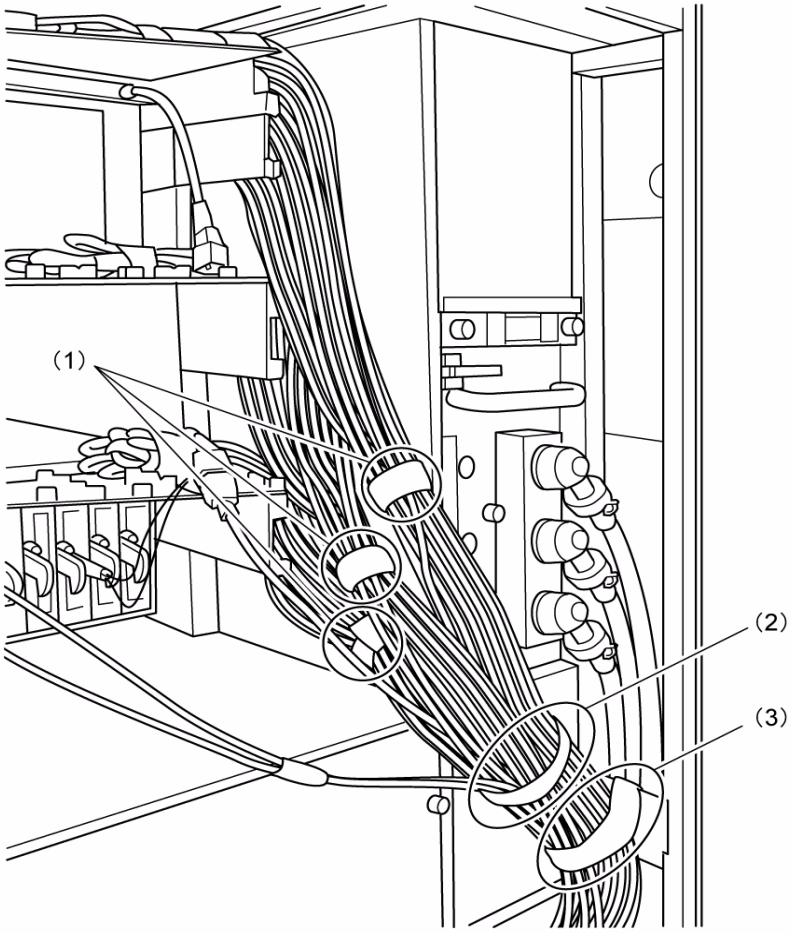
3. **Bind the cables connected to each external I/O expansion unit with a short hook-and-loop fastener. (See (1) in FIGURE 4-12.)**

Caution – Keep optical fiber cables as far apart from other cables as possible to prevent the optical fiber cables from being covered by the other cables.

4. **Bind the bundles of cables with a long hook-and-loop fastener at location (2) shown in FIGURE 4-12 while taking care not to touch the main line switch of the ACS.**

5. **Fasten the bundles of cables with a long hook-and-loop fastener to the cable holder at location (3) shown in FIGURE 4-12 while taking care not to touch the main line switch of the ACS.**

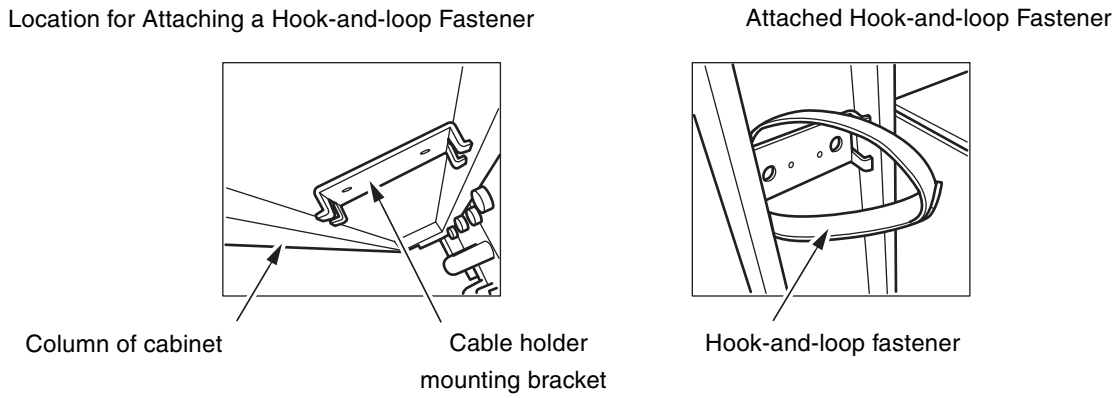
FIGURE 4-12 Magnified View of Part A (M8000, rear view)



4.7.1.3 For Server Using Three-phase Power Feed

Note – The server using three-phase power feed does not have any cable holder. In this case, fasten the cables by running the hook-and-loop fastener through the slit between the bracket at the cable holder mounting location and a column in the cabinet. (FIGURE 4-13 shows the fastening location on the left route.)

FIGURE 4-13 Cable Routing of the Server Using Three-Phase Power Feed



6. **Fasten the cables running along the left route to the cable holder with a long hook-and-loop fastener. (See (4) in FIGURE 4-14.)**
7. **Allow 12 cables of all the cables running along the right route to hang along the right frame. (See (5) in FIGURE 4-14.)**
8. **Run the remaining cables from the right side to the left side while taking care to prevent the cables from blocking the ventilation slits. (See (6) in FIGURE 4-14.)**

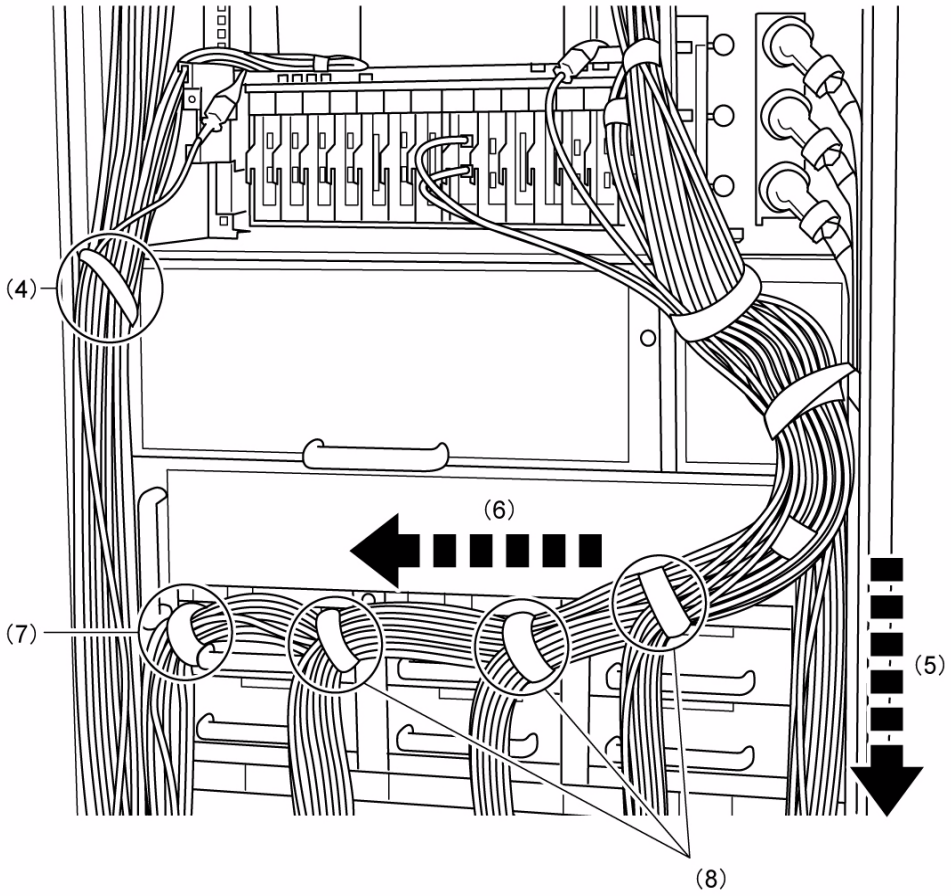
Note – Fujitsu recommends running the cables above the handle of the FAN unit.

9. **Fasten 24 cables with a short hook-and-loop fastener to the handle of the fan shelf. (See (7) in FIGURE 4-14.)**

10. **Divide the remaining cables into three routes (about 12 cables per route), bind the cables on each route with a short hook-and-loop fastener, and allow them to hang from the fastener. (See (8) in** FIGURE 4-14**.)**

Caution – Adjust the positioning of the routes appropriately so that the cables do not cover a PCI cassette at the front of an IOU.

FIGURE 4-14 Magnified View of Part B (M8000, rear view)



11. **Fasten the cables running along the left route to the cable holder with a short hook-and-loop fastener. (See (9) in FIGURE 4-15.)**

12. **Bind each remaining bundle of hanging cables with a short hook-and-loop fastener. (See (10) in FIGURE 4-15.)**

13. **Also bind each of these bundles of cables with a short hook-and-loop fastener at a location near the floor panel. (See (11) in FIGURE 4-15.)**

    Binding the cables near the floor panel facilitates cable handling through floor panel openings.

FIGURE 4-15 Magnified View of Part C (M8000, rear view)

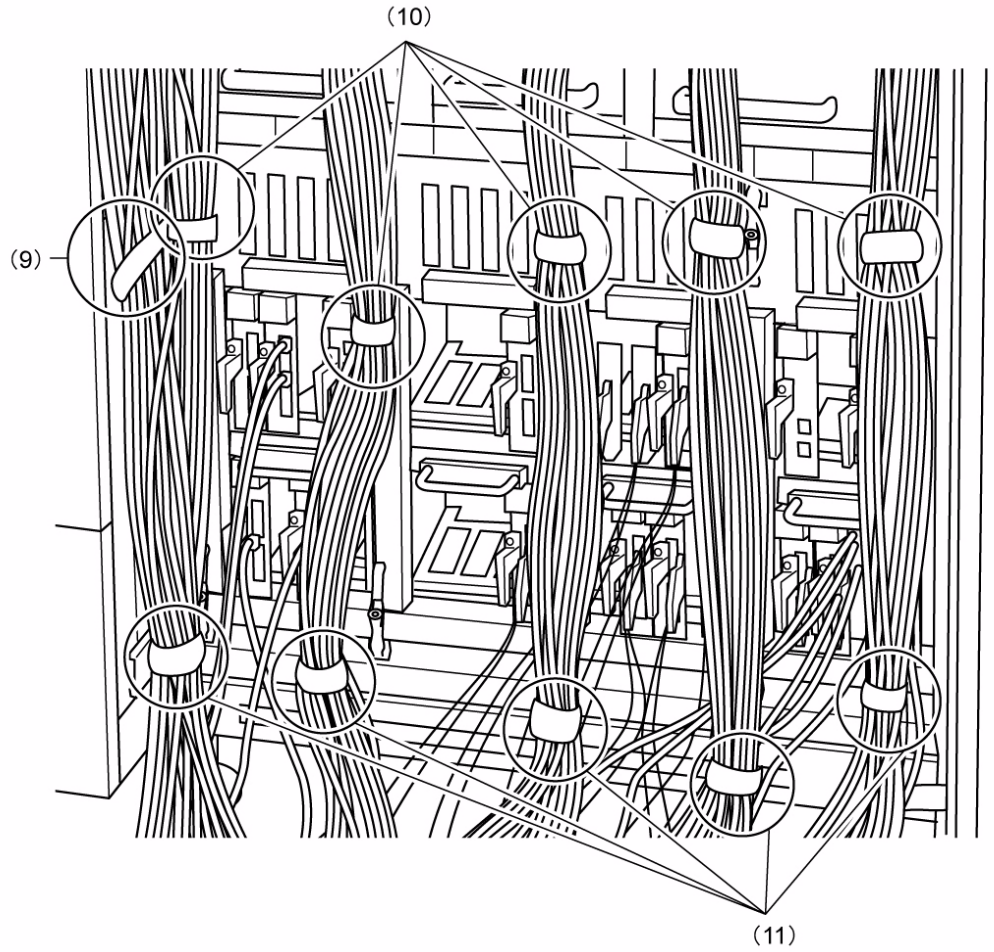
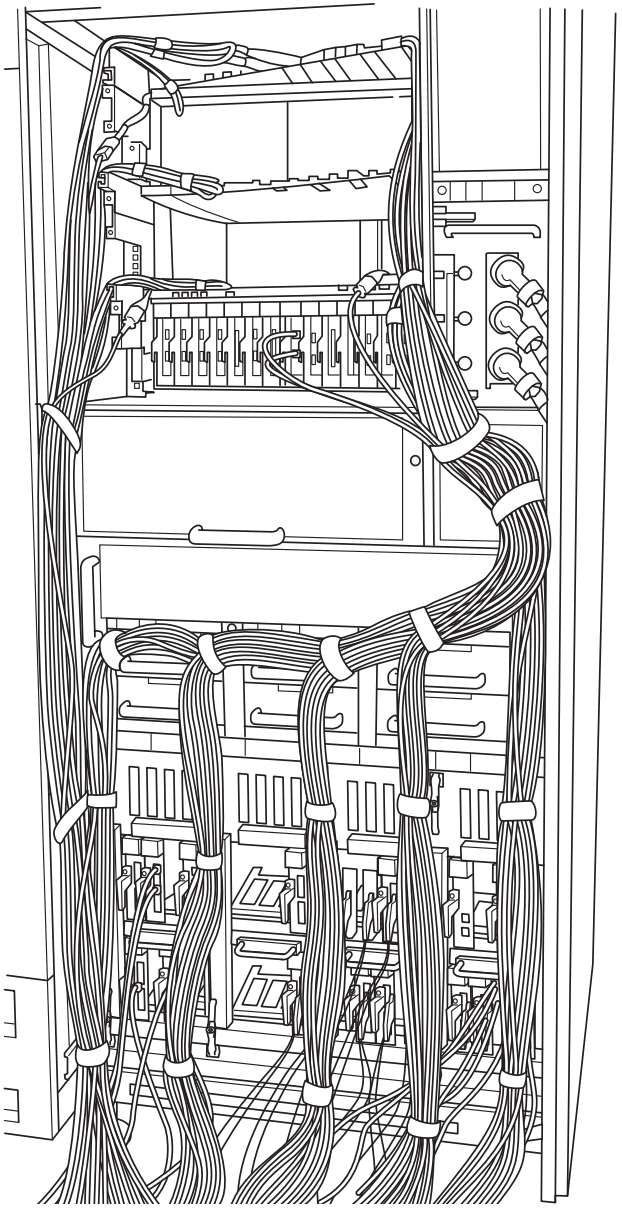


FIGURE 4-16 Completed Cable Routing with Three External I/O Expansion Units Mounted (M8000, rear view)



4.7.1.4 When One External I/O Expansion Unit Mounted

This section provides an example of the cable routing procedure applied when one external I/O expansion unit is mounted in the rack space for the SPARC Enterprise M8000 server.

Cable Routing Procedure

The cable routing procedure explained below is an example of the recommended procedure.

This section explains the recommended cable routing procedure in an example using a configuration in which one external I/O expansion unit is mounted and 34 LAN cables are connected to the external I/O expansion unit.

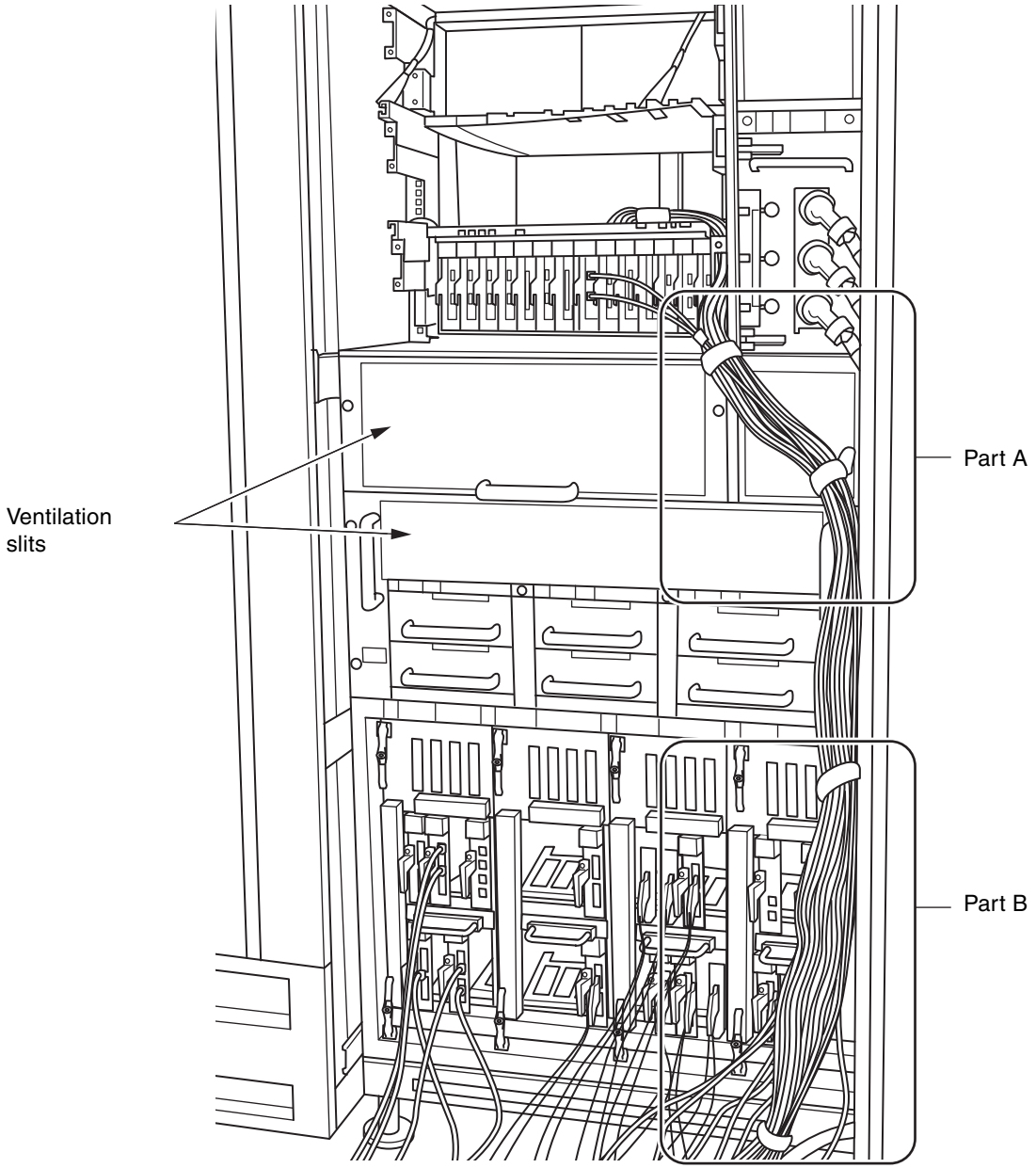
When actually routing cables, perform the work properly with reference to this procedure while following the precautions for cable routing.

Hook-and-loop Fasteners Used

This procedure specifies only the short and long hook-and-loop fasteners recommended for use. During actual cable routing, use the type of hook-and-loop fastener appropriate for the number of cables to be bound.

1. **Run all the cables connected to the external I/O expansion unit along the right route.**

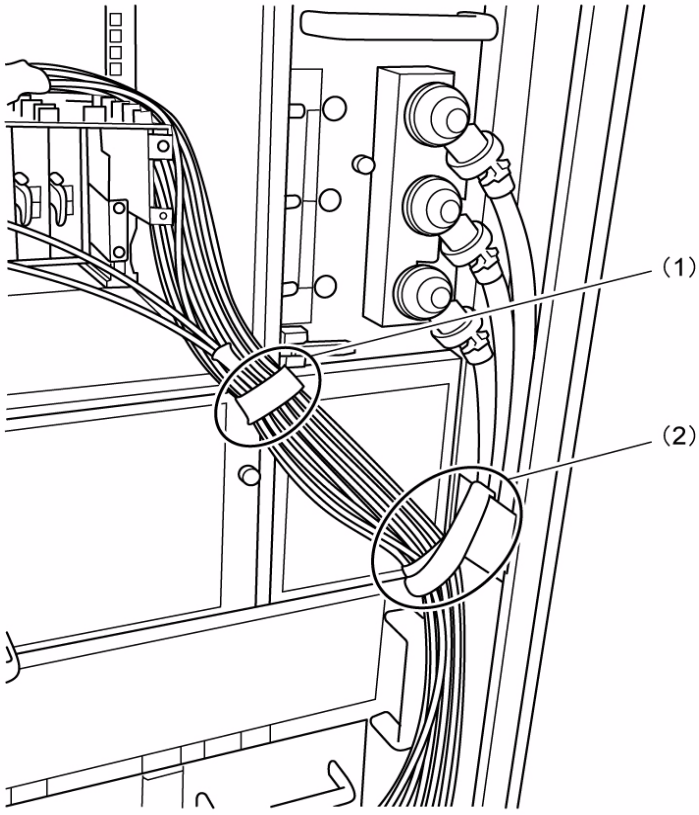
FIGURE 4-17 Cable Routing When One External I/O Expansion Unit Mounted (M8000, rear view)



2. **Bind the cables from the external I/O expansion unit with a short hook-and-loop fastener while taking care not to touch the main line switch of the ACS. (See (1) in FIGURE 4-18.)**

3. **Fasten the cables with a short hook-and-loop fastener to the cable holder at location (2) shown in FIGURE 4-18.**

FIGURE 4-18 Magnified View of Part A (M8000, rear view)



4. **Fasten the cables with a short hook-and-loop fastener to the cable holder at location (3) shown in FIGURE 4-19.**

5. **Also bind the cables with a short hook-and-loop fastener at a location near the floor panel. (See (4) in FIGURE 4-19.)**

   Binding the cables near the floor panel facilitates cable handling through floor panel openings.

FIGURE 4-19 Magnified View of Part B (M8000, rear view)

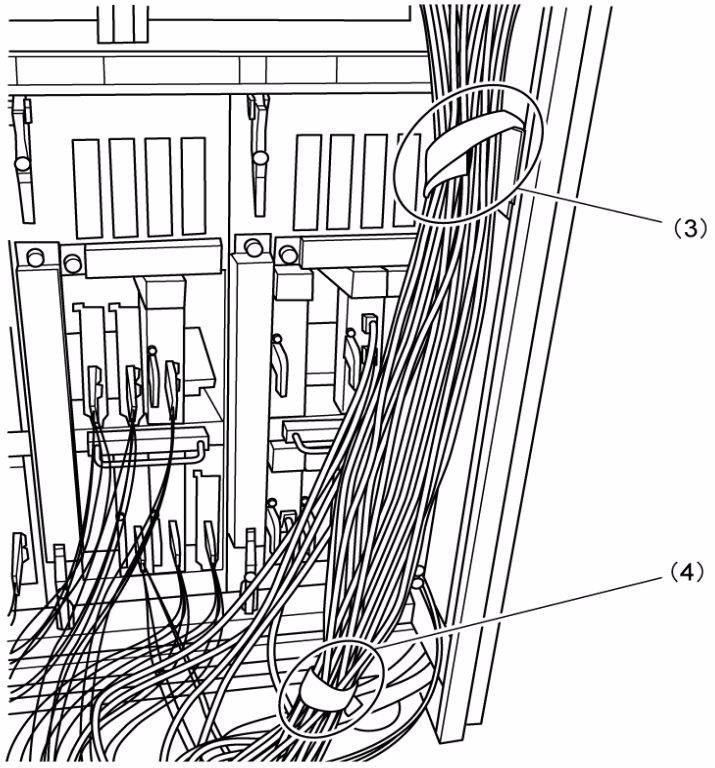
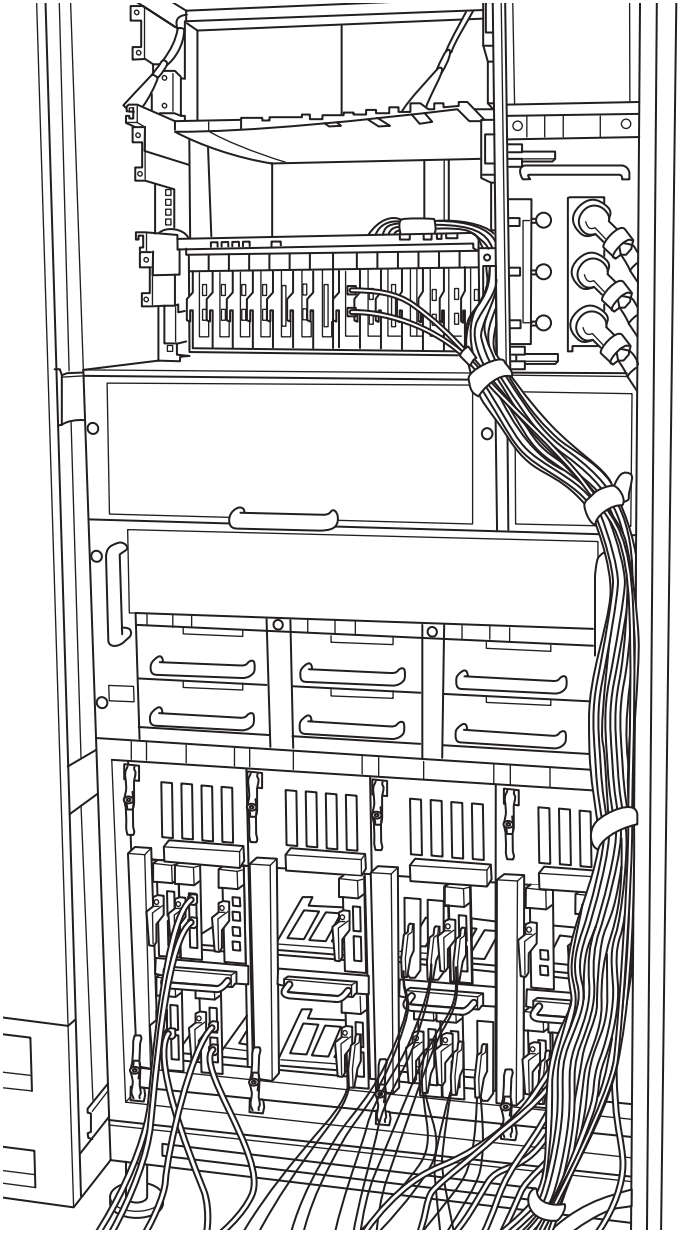


FIGURE 4-20 Completed Cable Routing with One External I/O Expansion Unit Mounted (M8000, rear view)



PART II Maintenance

Part II explains how to remove and replace FRUs.

The chapters are organized according to the FRU mounting locations.

Chapter 6 starts with an overview of FRUs, followed by explanations of the FRU removal and replacement procedures.

CHAPTER 5

Internal Components Access

This chapter explains how to access each unit of the server, in the following sections:

- Section 5.1, "How to Open and Close Doors" on page 5-1
- Section 5.2, "Corresponding Components and Doors That Can Be Accessed" on page 5-2
- Section 5.3, "How to Remove a Door" on page 5-3
- Section 5.4, "How to Remove a Side Panel" on page 5-4

5.1 How to Open and Close Doors

The high-end server is equipped with doors at the front and rear. The operator panel can be operated and checked when the doors are closed, but, to replace the operator panel or to access or maintain other components, the doors must be opened.

However, the backplane cannot be accessed by only opening a door. It cannot be accessed unless some units and working parts connected to it are removed.

As shown in FIGURE 5-1, each door can be opened and closed by inserting a key into the handle lock and turning the handle. Borrow the key from the system administrator.

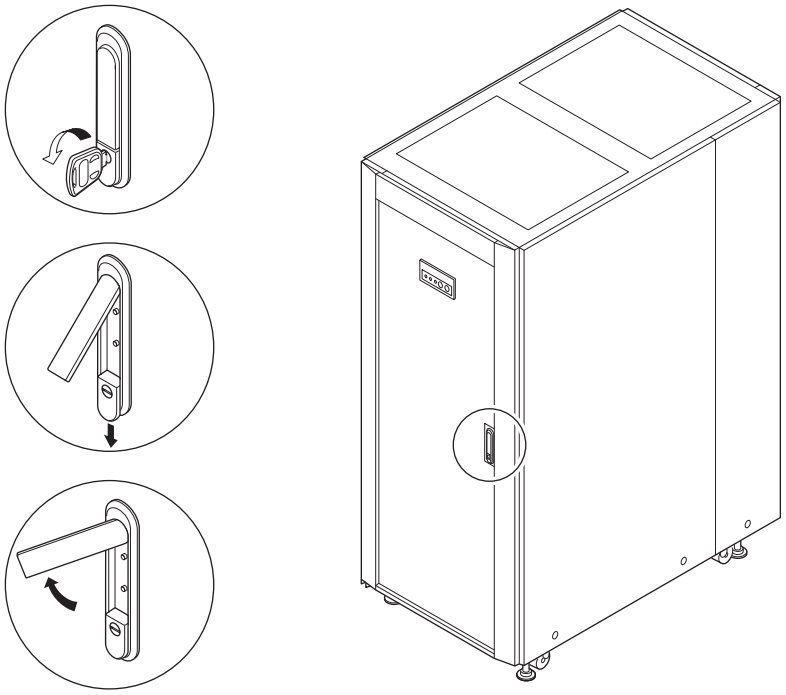
Note – There are two types of key: one for the doors of the server and the other for the operator panel. Both are managed by the system administrator.

The detailed procedure below explains how to open a door. The same procedure applies to both the front and rear doors.

1. **Insert the key into the lock above the handle, and turn it clockwise 90 degrees.**

2. **Push the projection down below the handle.**
   The part below the handle projects outward.
3. **Turn the handle counterclockwise and pull it out to open the door.**
   To close the door, reverse the above steps for opening it.

FIGURE 5-1 How to Open a Door (Front Door as an Example)



5.2 Corresponding Components and Doors That Can Be Accessed

TABLE 5-1 indicates which door should be opened to access a certain component.

Components are represented by their abbreviated names. For their formal names, see TABLE B-1 in Appendix B.

TABLE 5-1 Relationship Between Components and Doors That Can Be Accessed

Model	Component (abbreviation) maintained through front door	Component (abbreviation) maintained through rear door
M8000	CMU, XSCFU, TAPEU, DVDU, DDC_A, PSU, FAN_A (3-FAN), FAN_B (2-FAN #0 and #1), OPNL, SNSU, and RDPF	IOU, ACS_A, and FAN_B (2-FAN #2 to #7)
M9000	PSU, IOU (even ID), XSCFU_B, XSCFU_C (expansion cabinet), CLKU_B, XBU_B, TAPEU, DVDU, PSU, ACS_B, FAN_A (3-FAN #0 to #3), OPNL, and SNSU	CMU, IOU (odd ID), and FAN_A (3-FAN #4 to #15)

5.3 How to Remove a Door

If it is absolutely necessary to remove a door during maintenance, refer to FIGURE 5-2 and remove the grounding wire from the fixing bracket at the upper part of the door and the hinge parts. Then, lift the door to disengage it. Keep the removed door in a safe place.

The detailed procedure below explains how to remove a door. Most of the steps are the same when applied to the front or rear door.

1. **Remove the operator panel from the front door. This step is not required for the rear door.**
   a. **Unhook the cable holders to free the cables of the operator panel.**
   b. **Using a Phillips screwdriver, loosen the two screws securing the operator panel, and remove the operator panel from the front door.**
   c. **Affix the operator panel to some convenient location on the cabinet.**

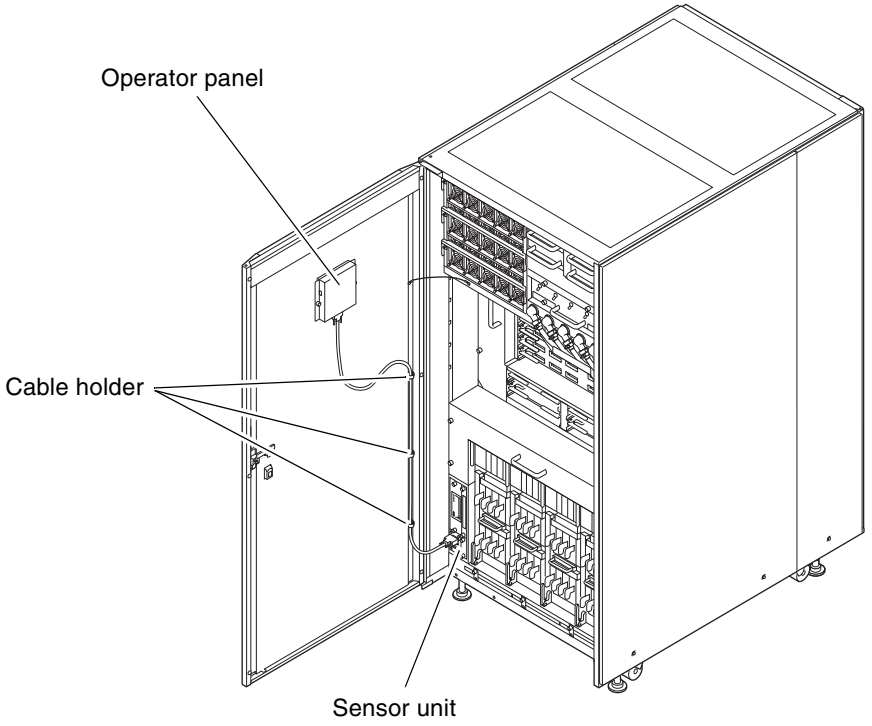
Note – If the operator panel need not be removed for maintenance, you can remove the cables from the sensor unit side.

2. **Remove the screw securing the upper hinge bracket on the right, and remove the grounding wire as well.**
3. **While supporting the door with one hand, loosen the screw securing the upper hinge bracket on the left.**
4. **Lift the door, and remove it from the lower hinge bracket.**

5. **Keep the door in a safe place.**

   To reinstall the door, reverse the above steps for removing it.

FIGURE 5-2 How to Remove a Door (Front Door)



5.4 How to Remove a Side Panel

To install an optional power supply cabinet or to connect an expansion cabinet to the M9000 base cabinet, the side panel of the cabinet must be removed.

The side panel hangs from a bracket on the top of the cabinet, and the lower part of the side panel is secured with a screw or screws.

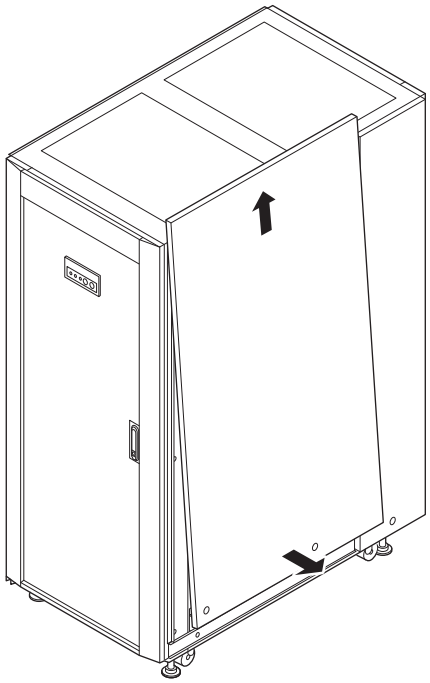
The structures of side panels are the same even for side panels of different sizes. A large side panel is secured with two screws, and a small one is secured with one screw.

The procedure for removing the side panel is follows.

1. **Using a Phillips screwdriver, completely loosen the one or two screws at the lower part of the side panel.**
2. **Lift the side panel, and remove it from the cabinet.**
3. **Keep the side panel in a safe place.**

   To reinstall the side panel, reverse the above steps for removing it.

FIGURE 5-3 How to Remove a Side Panel



CHAPTER 6

Replacement of CPU/Memory Board Unit (CMU), CPU, and DIMM

This chapter explains the procedures for replacing the CPU/Memory board unit (CMU) and the CPUs and DIMMs mounted in the CMU. It covers the following:

- Section 6.1, "Overview of the CMU" on page 6-1
- Section 6.3, "Active Replacement and Hot Replacement" on page 6-12
- Section 6.4, "Cold Replacement" on page 6-23
- Section 6.5, "CPU and DIMM Replacement" on page 6-29

There are three methods for replacing a CMU: active replacement, hot replacement, and cold replacement. For the definition of each method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

The section on swapping methods explains how to replace a CMU. For details on swapping only a CPU or DIMM, see also Section 6.5, "CPU and DIMM Replacement" on page 6-29.

Section 6.5, "CPU and DIMM Replacement" on page 6-29 also covers the memory installation conditions when adding more DIMMs.

6.1 Overview of the CMU

This section provides an overview of the CMU and shows CMU mounting locations.

Each CMU has 4 CPU slots and 32 DIMM slots. When a CMU is replaced, the mounted parts (CPUs and DIMMs) must be remounted in the new CMU. These mounted parts must be remounted at the same locations in the new CMU as their original pre-swap mounting locations. In addition, the flash memory of each CMU (FMEM) stores the POST/OpenBoot™ PROM firmware. The firmware is automatically restored to its pre-swap version.

For the version matching of firmware, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

FIGURE 6-1, FIGURE 6-2, and FIGURE 6-3 show the mounting locations of CMUs in the high-end server cabinets.

FIGURE 6-1 CMU Mounting Locations (Front of the M8000)

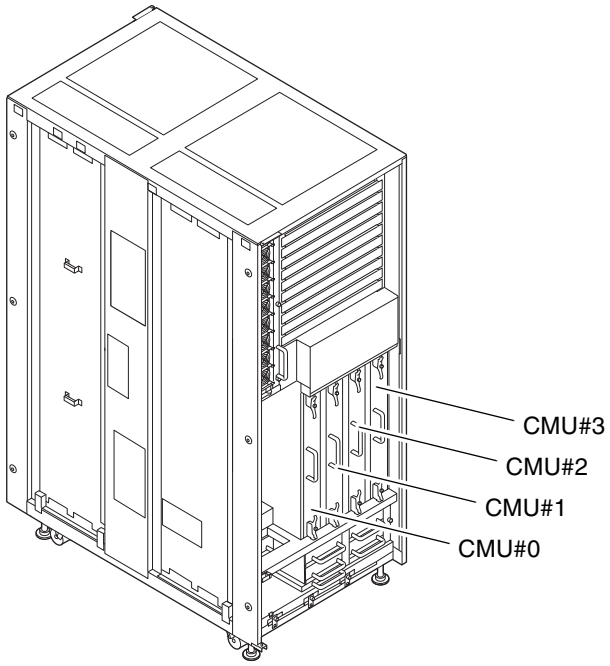


FIGURE 6-2 CMU Mounting Locations (Rear of the M9000 Base Cabinet)

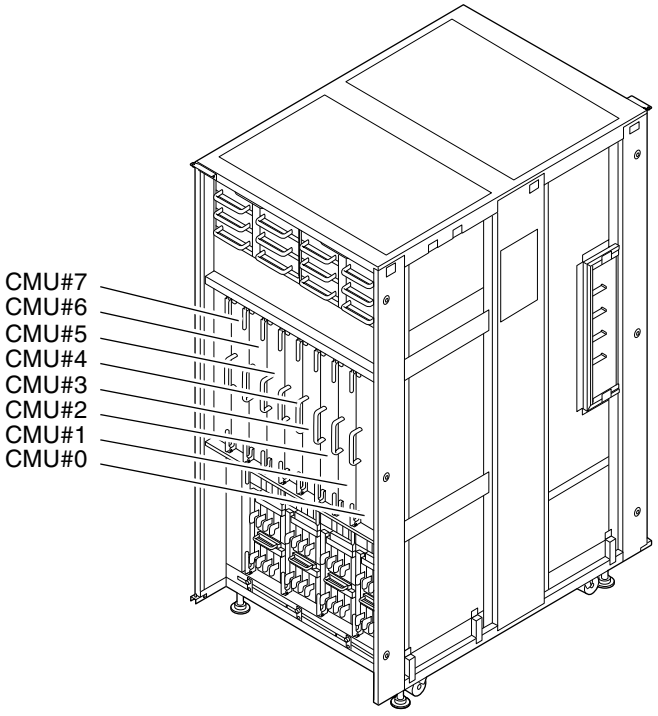


FIGURE 6-3 CMU Mounting Locations (Rear of M9000 with the Expansion Cabinet)

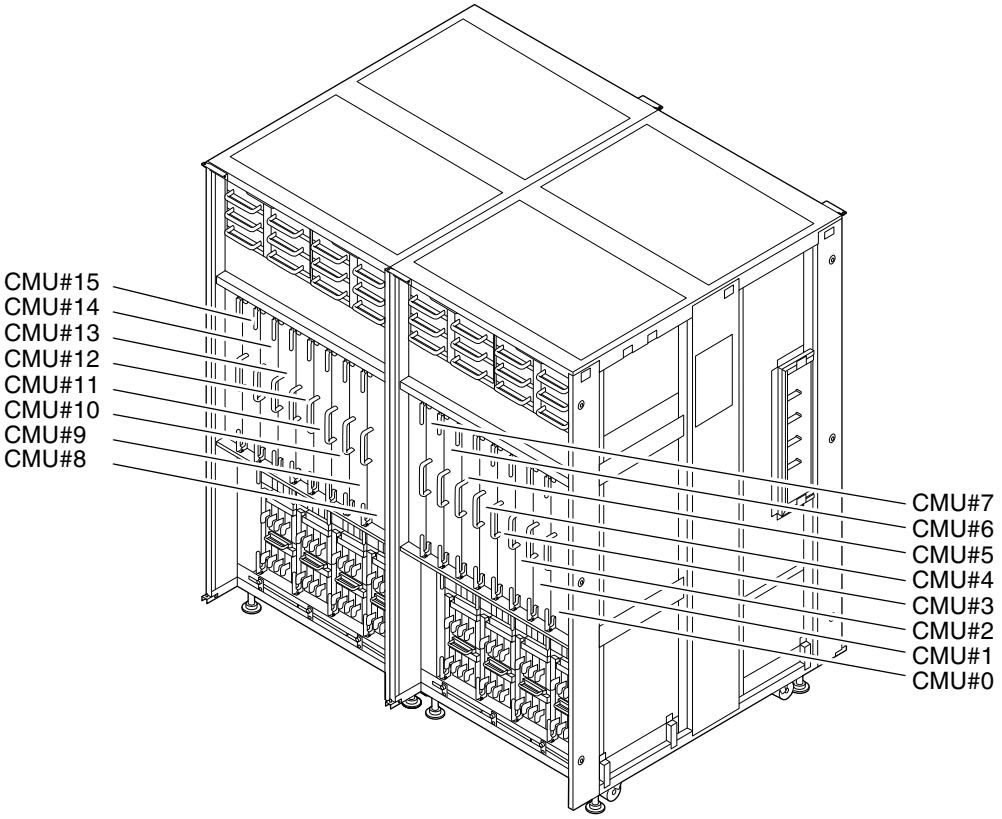


TABLE 6-1 lists the abbreviated names and component numbers of the CMUs.

TABLE 6-1 Abbreviated Names and Component Numbers of the CMUs

Model name	Abbreviated names and numbers
M8000	CMU#0 to 3
M9000 base cabinet	CMU#0 to 7
M9000 expansion cabinet	CMU#8 to 15

6.2 CPU Upgrade

This section describes the procedure to mount the SPARC64 VII processor on the SPARC Enterprise M8000/M9000 server.

Caution – The SPARC64 VII processors are supported by the XCP firmware (beginning with XCP 1070) and Solaris software. For more information about these minimum software and firmware requirements, see the latest version of the Product Notes (no earlier than the XCP 1070 edition) for your server.

Caution – You must complete the upgrades to the XCP firmware and to Solaris before inserting SPARC 64 VII processors into the chassis. When they have the minimum requirements of the XCP firmware and Solaris OS , it is not necessary to update them.

For more information about configuring combinations of processors in domains, refer to Section 2.2.13, "Domain Mode Configuration," in the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*. In particular, see the section "SPARC64 VI and SPARC64 VII Processors and CPU Operational Modes."

6.2.1 SPARC64 VII CPU Modules Added to a New Domain

Note – If you want to install Solaris 10 8/07 on the new domain, you must install from a patched image on the installation server. (See Step 18.)

1. **Log in to the XSCF on an account with platform administrative privileges.**
2. **Use the `showstatus`(8) command to confirm that a component in Faulted or Deconfigured status doesn't exist.**

```
XSCF> showstatus
```

3. **Change the key position on the operator panel from Locked to Service.**

4. **Collect an XSCF snapshot to archive system status prior to upgrade.**

   This will be help in case any problem occurred in this procedure.

```
XSCF> snapshot -t user@host:directory
```

5. **Update the XCP version.**

   For the firmware updating procedures, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

6. **After updating the XCP, reset the XSCF.**

```
XSCF> rebootxscf
```

7. **After resetting the XSCF, log in to the XSCF again.**

8. **Mount the CPU module (CPUM) on the CMU for add-on.**

   For the procedure, see the description about the CPU module installation in Section 6.5.1, "Replacing a CPU Module" on page 6-30.

9. **Mount the CMU, described in Step 8, on the server.**

   a. **Executing the `addfru`(8) command and select "`CMU/IOU`" from the maintenance menu.**

```
XSCF> addfru
```

   b. **Perform the operation according to the instructions displayed in the maintenance menu, referring to Section 6.3, "Active Replacement and Hot Replacement" on page 6-12.**

Note – Do not fail to execute the diagnosis of newly mounted CMU in the maintenance menu of `addfru`(8) command.

---

10. **Confirm that the mounted CPU module has been recognized by the server, and the error indicator asterisk (*) is not displayed.**

```
XSCF> showhardconf -M
```

11. **Confirm no abnormality occurred by using `showlogs error -v` and `showstatus`(8) commands.**

```
XSCF> showlogs error -v
XSCF> showstatus
```

12. **Move the key position on the operator panel from Service to Locked.**

13. **Sets the following for the CMU.**
    - Set up XSB.
    - Set up the domain
    - Set up the CPU operational mode of the domain.

    For each setting, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

14. **Use the** `setdomainmode`**(8) command, disable the autoboot function of the domain.**

    Refer to the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide* and the setdomainmode(8) man page for more information.

15. **Power on the domains.**

```
XSCF> poweron -d domain_id
```

16. **Confirm that the target domain has been correctly started.**

```
XSCF> showlogs power
```

17. **Confirm no abnormality occurred by using** `showlogs error -v` **and** `showstatus`**(8) commands.**

```
XSCF> showlogs error -v
XSCF> showstatus
```

18. **Install a version of Solaris OS that supports SPARC64 VII processors.**

Note – The SPARC64 VII processors are supported by the XCP firmware (beginning with XCP 1070) and Solaris software. For more information about these minimum software and firmware requirements, see the latest version of the Product Notes (no earlier than the XCP 1070 edition) for your server.

    For information about network-based installations, refer to *Solaris 10 8/07 Installation Guide: Network-Based Installations* (part 820-0177).

19. **Use the** `setdomainmode`**(8) command to enable the autoboot function of the domain.**

    The autoboot function is applied by a domain reboot. For more information, refer to the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide* and the `setdomainmode`(8) man page.

6.2.2 SPARC64 VII Processors Added to an Existing Domain

Adding SPARC64 VII Processors to an existing domain is a two step process. First you must prepare the system (see Section 6.2.2.1, "Preparing to Add SPARC64 VII Processors to an Existing Domain" on page 6-8) and then you must install the Processors using the instructions that correspond to your installation scenario.

6.2.2.1 Preparing to Add SPARC64 VII Processors to an Existing Domain

1. **If necessary, upgrade to a version of Solaris OS that supports SPARC64 VII processors.**

Note – The SPARC64 VII processors are supported by the XCP firmware (beginning with XCP 1070) and Solaris software. For more information about these minimum software and firmware requirements, see the latest version of the Product Notes (no earlier than the XCP 1070 edition) for your server.

---

2. **Log in to the XSCF on an account with platform administrative privileges.**
3. **Use the `showstatus`(8) command to confirm that a component in Faulted or Deconfigured status doesn't exist.**

```
XSCF> showstatus
```

4. **Turn off the power to a domain assigned the CMU of which you upgrade or add the CPU.**

```
XSCF> poweroff -d domain_id
```

5. **Confirm that the target domain stopped.**

```
XSCF> showlogs power
```

6. **Change the key position on the operator panel from Locked to Service.**
7. **Collect an XSCF snapshot to archive system status prior to upgrade.**

   This will be help in case any problem occurred in this procedure.

```
XSCF> snapshot -t user@host:directory
```

8. **Update the XCP version.**

   For the firmware updating procedures, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

9. **After updating the XCP, reset the XSCF.**

```
XSCF> rebootxscf
```

10. **After resetting the XSCF, log in to the XSCF again.**

11. **Power on the target domain, and apply OpenBoot PROM firmware.**

```
XSCF> poweron -d domain_id
```

   It stops at ok prompt. It is not necessary to start Solaris OS.

12. **Check the updated OpenBoot PROM version.**

   The OpenBoot PROM version of XCP 1082 is 02.09.0000.

```
XSCF> version -c cmu -v

DomainID 00 : 02.03.0000
DomainID 01 : 02.03.0000
DomainID 02 : 02.09.0000
DomainID 03 : 02.09.0000
...
DomainID 15 : 02.03.0000

XSB#00-0 : 02.03.0000 (Current), 02.02.0000 (Reserve)
XSB#00-1 : 02.03.0000 (Current), 02.02.0000 (Reserve)
XSB#00-2 : 02.03.0000 (Current), 02.02.0000 (Reserve)
XSB#00-3 : 02.03.0000 (Current), 02.02.0000 (Reserve)
XSB#01-0 : 02.03.0000 (Reserve), 02.09.0000 (Current)
XSB#01-1 : 02.03.0000 (Reserve), 02.09.0000 (Current)
XSB#01-2 : 02.03.0000 (Reserve), 02.09.0000 (Current)
XSB#01-3 : 02.03.0000 (Reserve), 02.09.0000 (Current)
...
```

13. **Turn off the power to the target domain.**

```
XSCF> poweroff -d domain_id
```

14. **Continue with the appropriate installation procedure:**

- If you are adding a new SPARC64 VII-equipped CPU module to a domain configured with SPARC64 VI processors, continue with Section 6.2.2.2, "Adding a SPARC64 VII CPU Module to a Domain Configured With SPARC64 VI" on page 6-10.

- If you are upgrading an existing SPARC64 VI CPU module in an existing domain to SPARC64 VII processors, continue with Section 6.2.2.3, "Upgrading a SPARC64 VI CPU Module to SPARC64 VII on an Existing Domain" on page 6-11.

6.2.2.2 Adding a SPARC64 VII CPU Module to a Domain Configured With SPARC64 VI

This procedure must be preceded by Section 6.2.2.1, "Preparing to Add SPARC64 VII Processors to an Existing Domain" on page 6-8. If you have not completed that procedure, do so before continuing.

1. **Install the CMU in the server.**

- For adding the CPU, operate by hot replacement, referring to Section 6.3, "Active Replacement and Hot Replacement" on page 6-12.

Note – Do not fail to execute the diagnosis of newly mounted CMU in the maintenance menu of `replacefru`(8) command.

---

2. **Log in to the XSCF on an account with platform administrative privileges.**

3. **Confirm that the mounted CPU module has been recognized by the server, and the error indicator asterisk (*) is not displayed.**

```
XSCF> showhardconf -M
```

4. **Confirm no abnormality occurred by using `showlogs error -v` and `showstatus`(8) commands.**

```
XSCF> showlogs error -v
XSCF> showstatus
```

5. **Move the key position on the operator panel from Service to Locked.**

6. **In case of addition, sets the following for the CMU.**

- Set up XSB.
- Set up the LSB.
- Add the XSB to the domain.

  Refer to Chapter 2, "Setting Up XSCF," in the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide* for information about these settings.

7. **Power on the target domains.**

```
XSCF> poweron -d domain_id
```

8. **Confirm that the target domain has been correctly started.**

```
XSCF> showlogs power
```

9. **Confirm no abnormality occurred by using** `showlogs error -v` **and** `showstatus` **(8) commands.**

```
XSCF> showlogs error -v
XSCF> showstatus
```

6.2.2.3 Upgrading a SPARC64 VI CPU Module to SPARC64 VII on an Existing Domain

This procedure must be proceeded by Section 6.2.2.1, "Preparing to Add SPARC64 VII Processors to an Existing Domain" on page 6-8. If you have not completed that procedure please do so before continuing.

1. **Log in to the XSCF on an account with platform administrative privileges.**
2. **Replace the SPARC64 VI CPU module with the SPARC64 VII CPU module.**

- For replacing the CPU, operate by hot replacement, referring to Section 6.3, "Active Replacement and Hot Replacement" on page 6-12.

3. **Confirm that the mounted CPU module has been recognized by the server, and the error indicator asterisk (*) is not displayed.**

```
XSCF> showhardconf -M
```

4. **Confirm no abnormality occurred by using** `showlogs error -v` **and** `showstatus` **(8) commands.**

```
XSCF> showlogs error -v
XSCF> showstatus
```

5. **Move the key position on the operator panel from Service to Locked.**
6. **Set up and confirm the CPU operational mode of the domain.**

   For more information, refer to Chapter 2, "Setting Up XSCF," in the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

7. **Power on the target domains.**

```
XSCF> poweron -d domain_id
```

8. **Confirm that the target domain has been correctly started.**

```
XSCF> showlogs power
```

9. **Confirm no abnormality occurred by using** `showlogs error -v` **and** `showstatus` **(8) commands.**

```
XSCF> showlogs error -v
XSCF> showstatus
```

6.3 Active Replacement and Hot Replacement

The active replacement procedure and hot replacement procedure are almost the same. This section explains both procedures together. Each step that is different between these procedures is distinguished by "Active replacement" or "Hot replacement" as a header. The main difference between active replacement and hot replacement is as follows:

- Active replacement: A CMU is disconnected from or configured into a domain by dynamic reconfiguration (DR).

  There are restrictions on the DR operation depending on whether the Solaris OS operates in the SPARC64™ VII enhanced mode or in the SPARC64™ VI compatible mode. For DR operation, see the *SPARC Enterprise M4000/M5000/M8000/M9000 Servers Dynamic Reconfiguration (DR) User's Guide*.

- Hot replacement: A domain must be stopped and restarted.

The procedure for active replacement and hot replacement is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching CMU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Check whether the CMU to be replaced is logically divided and what domains are affected by the replacement.**

   a. **From the console that is connected to XSCF, log in to XSCF, and execute the** `showfru` **command. Then, check whether the CMU is logically divided.**

b. If it is logically divided, execute the `showdcl` command to check whether the CMU to be replaced and another CMU comprise a domain.

c. Execute the `showboards` command to check the use states of the devices and resources in the CMU.

For details on how to log in to XSCF and commands, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.
For details of commands, see also the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

3. Prepare the CMU that is to be replaced.

- Active replacement:

  From the terminal connected to XSCF, execute the `deleteboard` command to dynamically disconnect the CMU to be replaced from all the domains that have been recognized in Step 2 as including the CMU. (The CMU status can be checked by executing the `showboards` command.)

  To execute this command, you need the privilege of platform administrator (platadm) or domain administrator (domainadm). For details, see Section 4.2.1, "Disconnecting a FRU from a Domain" on page 4-3, and the *SPARC Enterprise M4000/M5000/M8000/M9000 Servers Dynamic Reconfiguration (DR) User's Guide*.
  For details on how to log in to the XSCF, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

- Hot replacement:

  From the terminal connected to the XSCF, select all the domains that have been recognized in Step 2 as including the CMU to be replaced, and execute the `poweroff -d` command to shut down the domains. (The CMU status can be checked by executing the `showboards` command.)

  Domain administrator authority is required for executing this command. For details on how to log in to the XSCF, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

4. **Use the maintenance menu to select the CMU to be replaced. (The maintenance menu is used up to Step 20.)**

   The fieldeng permission is required for executing this command.

   a. **From the console that is connected to XSCF, log in to XSCF, and execute the `replacefru` command.**

      As shown in FIGURE 6-4, the initial page of the maintenance menu is displayed.

FIGURE 6-4 Initial Page of the Maintenance Menu

```
------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. CMU/IOU(CPU Memory Board Unit/IO Unit)
2. FAN(Fan Unit)
3. PSU(Power Supply Unit)
4. XSCFU(Extended System Control Facility Unit)
5. DDC_A(DDC for BP_A)
------------------------------------------------
Select [1-5|c:cancel] :
```

Note – DDC_A is displayed only for the M8000.

   b. **From the replacement parts list in the maintenance menu, select 1, "CMU/IOU."**

   c. **Then, perform the operation according to the instructions displayed in the maintenance menu.**

      Check the states of the LEDs (POWER LED: off; CHECK LED: blinking) on the CMU to be replaced, and begin the actual replacement work when a message instructing the user to replace the target CMU is displayed. Leave the maintenance menu as is until Step 17.

5. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See Section 1.4, "Antistatic Precautions" on page 1-6.**

6. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

7. **Remove the CMU to be replaced.**

   a. **Using a Phillips screwdriver, turn the knob screws securing the upper and lower eject/lock levers 90 to 180 degrees to unlock the levers. (Turn the knob screw while lightly pulling the lever by one hand.)**

   b. **Unlock the eject/lock levers to pull the CMU off the backplane.**

   c. **While grasping the handle at the front of the CMU, pull the CMU out partially until the [NEAR TO END] label comes into view.**

   d. **Raise the handle at the upper part of the CMU.**

   e. **While grasping the front and upper handles of the CMU, pull it out slowly from the slot.**

Note – To upgrade the CMU, remove the dummy (filler) unit before mounting the CMU to be added. Since the same levers are used on the dummy (filler) unit, please operate the eject/lock levers in the same manner.

Caution – A CMU with mounted components in the maximum configuration weighs about 22 kg.

FIGURE 6-5 Removing the CMU (Front of the M8000)

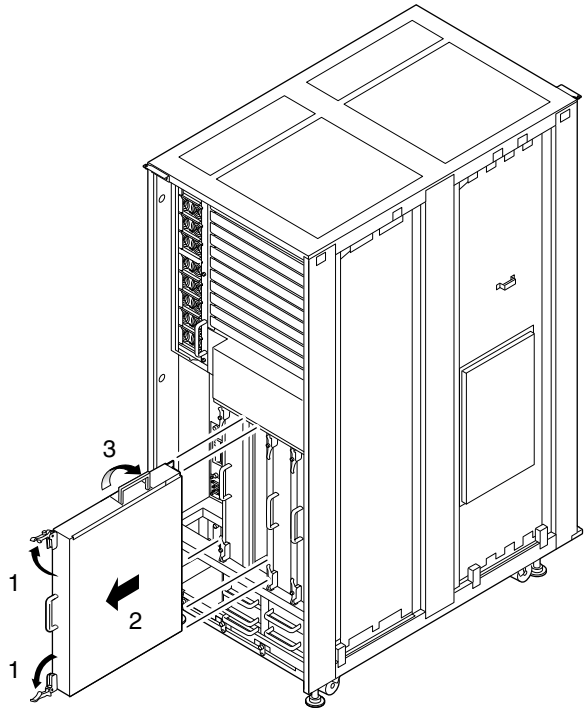
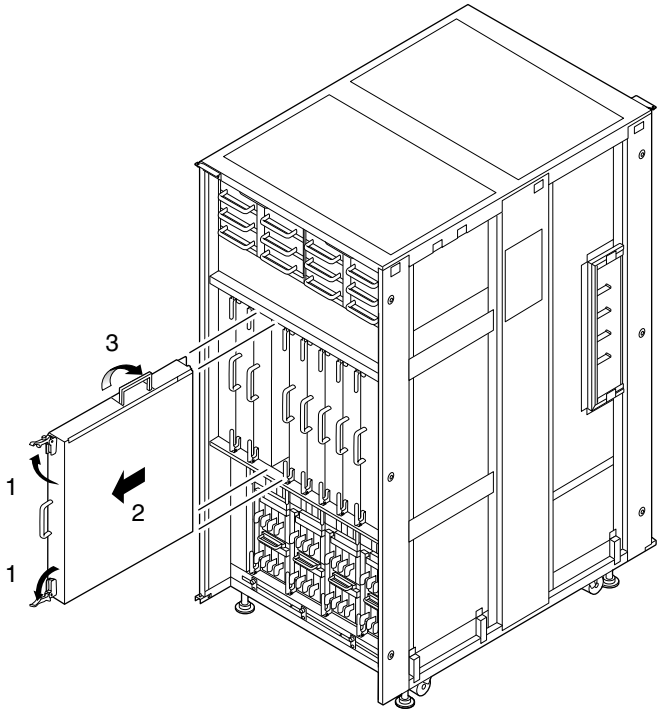


FIGURE 6-6 Removing the CMU (Rear of the M9000 Base Cabinet)



8. **Place the removed CMU with the cover and its label facing upward on an antistatic mat.**
9. **Remove the cover of the CMU.**
   a. **Pull the two latches on the connector side of the CMU to unlock the latches.**
   b. **Slide the cover of the CMU toward the connector side to release it from the guide pins (two pins on each side).**
   c. **Raise the cover of the CMU to remove it.**
10. **Remove the DIMM duct cover. (See** FIGURE 6-7**)**

11. **Replace parts.**

    In CMU replacement:

    Remove all the CPUs and DIMMs mounted in the removed CMU, and remount them in the replacement CMU.

Caution – Be sure to remount the CPUs and DIMMs in the same locations in the replacement CMU as their mounting locations in the removed CMU.

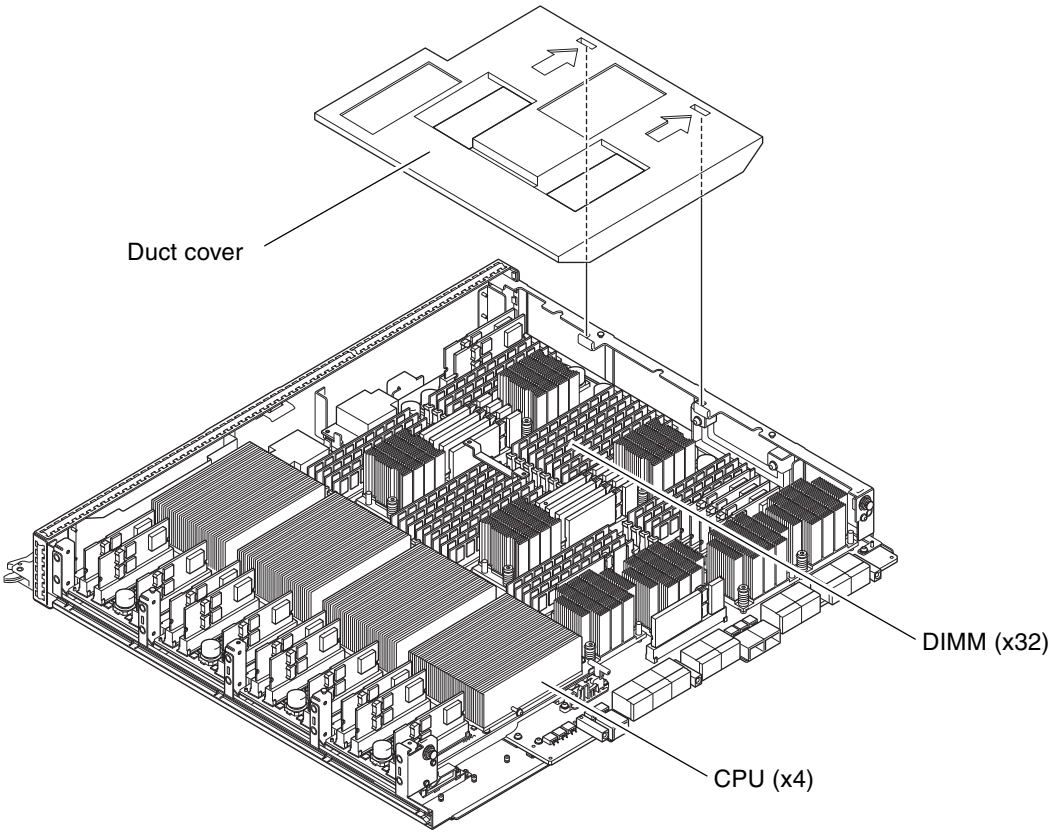
For CPU replacement:

Replace each swap target CPU mounted in the removed CMU with a replacement CPU. For the replacement procedure, see Section 6.5, “CPU and DIMM Replacement” on page 6-29.

For DIMM replacement:

Replace each swap target DIMM mounted in the removed CMU with a replacement DIMM. For the replacement procedure, see Section 6.5, “CPU and DIMM Replacement” on page 6-29.

FIGURE 6-7 CPU and DIMM Locations



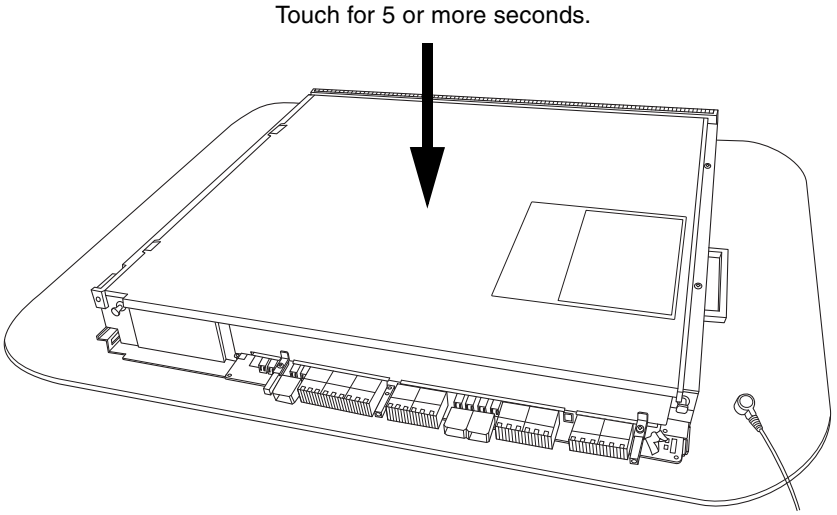
12. **Place the DIMM duct cover back at its original location. Insert the L-shaped projections on the CMU frame into the two positioning slits of the DIMM duct cover.**

13. **Follow the removal instructions in Step 9 in reverse order to attach the cover of the CMU, and press the latch pins to lock the latches.**

14. **Place the replacement CMU on the antistatic mat, and touch the metallic chassis for five or more seconds with your bare hand wearing the antistatic wrist strap, to remove static electricity.**

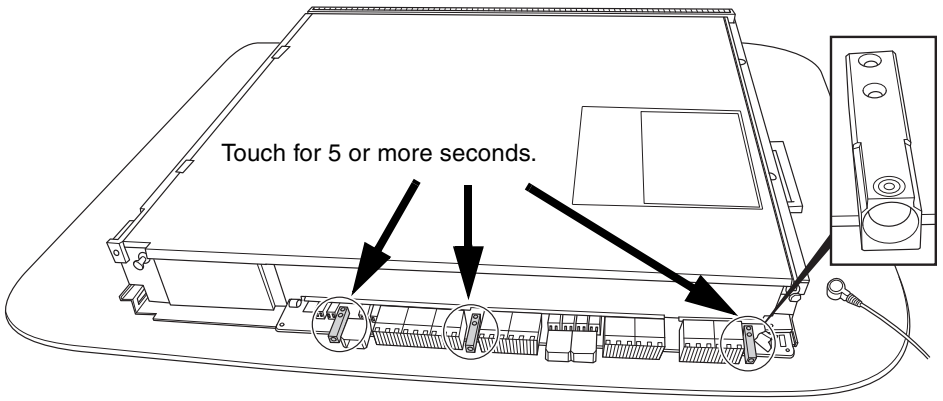
Caution – To mount a new CMU, ensure that the board is placed on a grounded antistatic mat. Then, touch it with your bare hand while wearing a properly connected antistatic wrist strap. This will remove any static electricity before installing it in the server. Take care not to damage the connector on the CMU edge.

FIGURE 6-8 Metallic Chassis (CMU)



15. **Touch each of the designated points on the guide blocks for 5 or more seconds with your bare hand wearing the antistatic wrist strap.**

FIGURE 6-9 Guide Block (CMU)



16. **Mount the replacement CMU by following the removal instructions in** Step 7 **in reverse order. Align the CMU with the slot guides, insert it carefully, and secure it firmly.**

    Push the eject/lock levers as far as they will go, and then push the knob screws on the upper and lower eject/lock levers to lock them in position. When the knob screws remain in position, the CMU is securely mounted.

Note – Mount the dummy (filler) unit in the same manner as CMU. Since the same levers are used on the dummy (filler) unit, please operate the eject/lock levers in the same manner.

Caution – Do not forcibly push the CMU when inserting it, even if it is not moving smoothly. If the CMU is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

---

17. **Go back to the terminal that is connected to XSCF, and perform the input operation according to the instructions of the maintenance menu that is displayed after the replacement.**

    a. **Because the displayed messages are different between active replacement and hot replacement, perform the operation according to the instructions for each case. When the display of the maintenance menu returns to the initial page, the operation is completed.**

b. Exit the maintenance menu.

18. Configure the CMU into the system.

- Active replacement:

  Use the `addboard` command to dynamically configure the relevant CMU into a domain. Perform this operation for all the domains that have been recognized in Step 2 as including the CMU to be replaced.

  For details, see Section 4.2.2, "Disconnecting and Replacing a FRU" on page 4-5, and the *SPARC Enterprise M4000/M5000/M8000/M9000 Servers Dynamic Reconfiguration (DR) User's Guide*.

- Hot replacement:

  From the console that is connected to XSCF, execute the `poweron -d` command of XSCF to turn on power to the domain.

  When the power to the domain is turned on, version synchronization of OpenBoot PROM (OBP) is automatically performed. When version synchronization is completed, the power-on self test (POST) is performed. When ok prompt displayed on the console of relevant domain, POST is completed.

19. Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.

Unless "*" is displayed for a replacement CMU, CPU, or DIMM, it is operating normally.

For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

20. Close the door on the server, and lock it.

6.4 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching CMU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Remove the CMU to be replaced. (See** FIGURE 6-5 **or** FIGURE 6-6**)**

   a. **Using a Phillips screwdriver, turn the knob screws securing the upper and lower eject/lock levers 90 to 180 degrees to unlock the levers. (Turn the knob screw while lightly pulling the lever by one hand.)**

   b. **Unlock the eject/lock levers to pull the CMU off the backplane.**

   c. **While grasping the handle at the front of the CMU, pull out the CMU partially until the [NEAR TO END] label comes into view, and then stop pulling.**

   d. **Raise the handle at the upper part of the CMU.**

e. **While grasping the front and upper handles of the CMU, pull it out slowly from the slot.**

Note – To upgrade the CMU, remove the dummy (filler) unit before mounting the CMU to be added. Since the same levers are used on the dummy (filler) unit, please operate the eject/lock levers in the same manner.

Caution – A CMU with mounted components in the maximum configuration weighs about 22 kg.

---

9. **Place the removed CMU with the cover facing upward on an antistatic mat.**
10. **Remove the cover of the CMU.**
    a. **Pull the two latches on the connector side of the CMU to unlock the latches.**
    b. **Slide the cover of the CMU toward the connector side to release it from the guide pins (two pins on each side).**
    c. **Raise the cover of the CMU to remove it.**
11. **Remove the DIMM duct cover.**
12. **Replace parts.**

    In CMU replacement:

    Remove all the CPUs and DIMMs mounted in the removed CMU, and remount them in the replacement CMU.

Note – Be sure to remount the CPUs and DIMMs in the same locations in the replacement CMU as their mounting locations in the swap target CMU.

For CPU replacement:

Replace each swap target CPU mounted in the removed CMU with a replacement CPU. For the replacement procedure, see Section 6.5, “CPU and DIMM Replacement” on page 6-29.

For DIMM replacement:

Replace each swap target DIMM mounted in the removed CMU with a replacement DIMM. For the replacement procedure, see Section 6.5, “CPU and DIMM Replacement” on page 6-29.

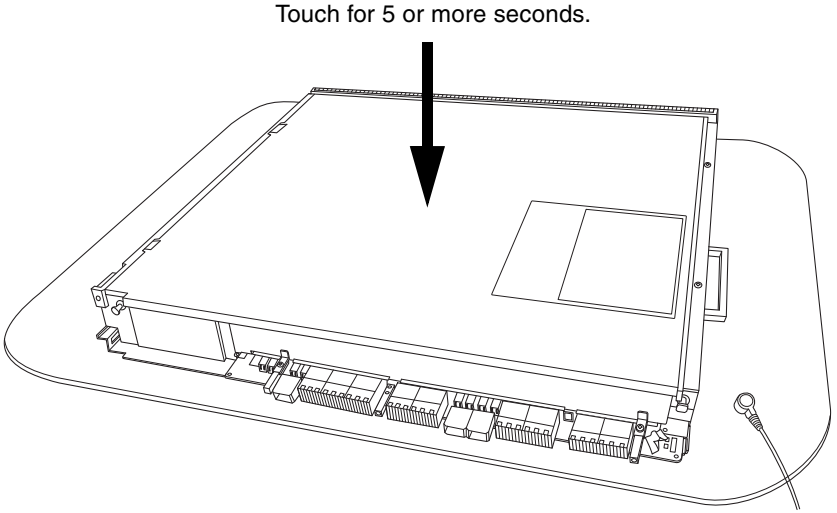
13. **Place the DIMM duct cover back at its original location. Insert the L-shaped projections on the CMU frame into the two positioning slits of the DIMM duct cover.**

14. **Follow the removal instructions in Step 10 in reverse order to attach the cover of the CMU, and press the latch pins to lock the latches.**

15. **Place the replacement CMU on the antistatic mat, and touch the metallic chassis for five or more seconds with your bare hand wearing the antistatic wrist strap, to remove static electricity.**

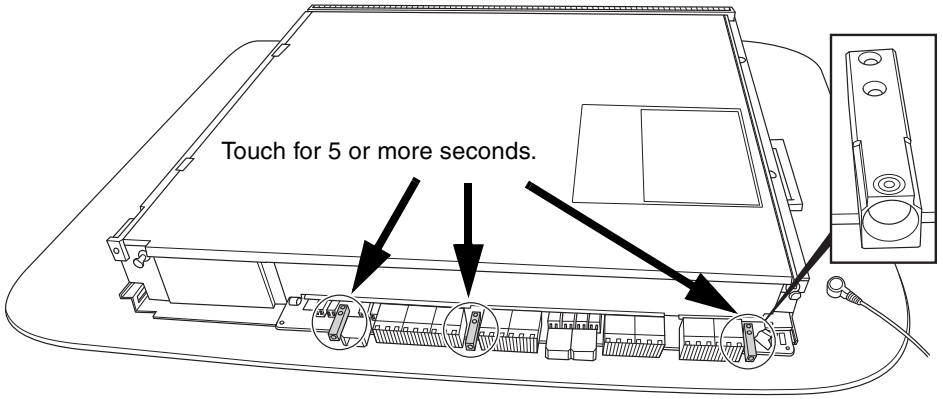
Caution – To mount a new CMU, ensure that the board is placed on a grounded antistatic mat. Then, touch it with your bare hand while wearing a properly connected antistatic wrist strap. This will remove any static electricity before installing it in the server. Take care not to damage the connector on the FRU edge.

FIGURE 6-10 Metallic Chassis (CMU)



16. **Touch each of the designated points on the guide blocks for 5 or more seconds with your bare hand wearing the antistatic wrist strap.**

FIGURE 6-11 Guide Block (CMU)



17. **Mount the replacement CMU by following the removal instructions in** Step 8 **in reverse order. Align the CMU with the slot guides, insert it carefully, and secure it firmly.**

    Push the eject/lock levers as far as they will go, and then push the knob screws on the upper and lower eject/lock levers to lock them in position. When the knob screws remain in position, the CMU is securely mounted.

Note – Mount the dummy (filler) unit in the same manner as CMU. Since the same levers are used on the dummy (filler) unit, please operate the eject/lock levers in the same manner.

Caution – Do not forcibly push the CMU when inserting it, even if it is not moving smoothly. If the CMU is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

---

18. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

19. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

20. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From the console that is connected to XSCF, execute the `poweron -d` <*domain-id*> command of XSCF for the domain of the swap target new CMU.

    Power to all the domains is turned on. Firmware version synchronization of the target domain is automatically performed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

21. **Using the XSCF `version` command, confirm that the firmware version of the target domain is the same in the replacement CMU.**

    For details of firmware version synchronization, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

22. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for a replacement CMU, CPU, or DIMM, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

23. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

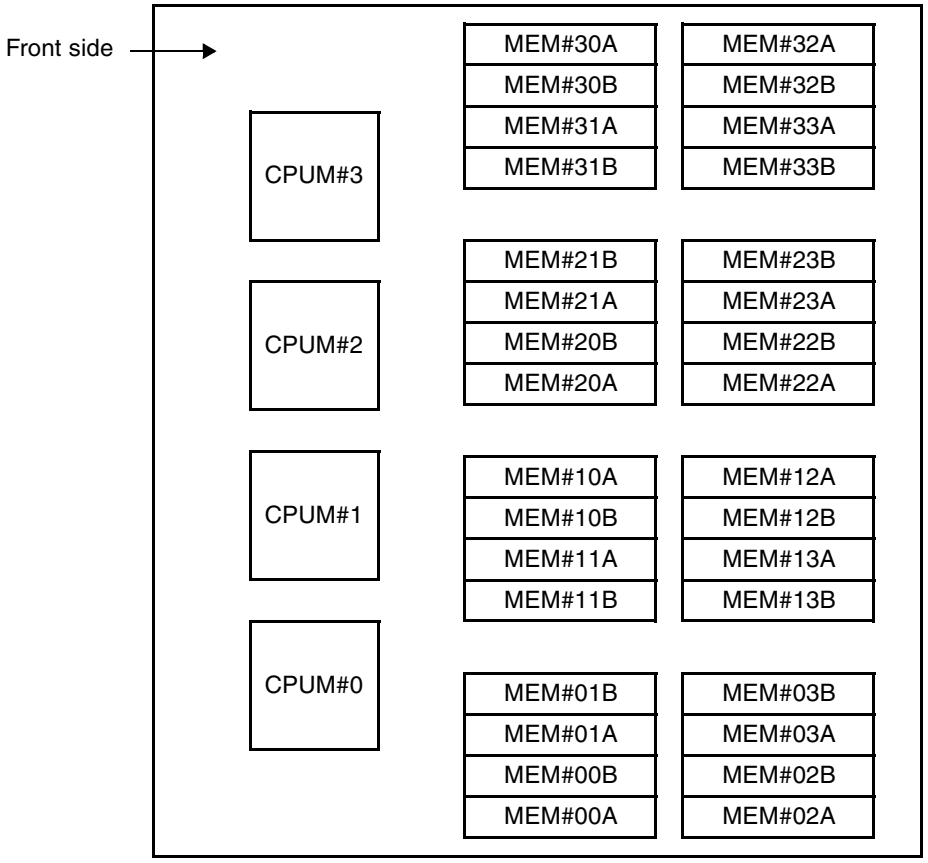
---

24. **Close the door on the server, and lock it.**

6.5 CPU and DIMM Replacement

When replacing a CPU module or DIMM, replace it with one of the same type. For details of the mounting locations indicated in messages, see FIGURE 6-12.

FIGURE 6-12 CPU Module and DIMM (MEM) Mounting Locations

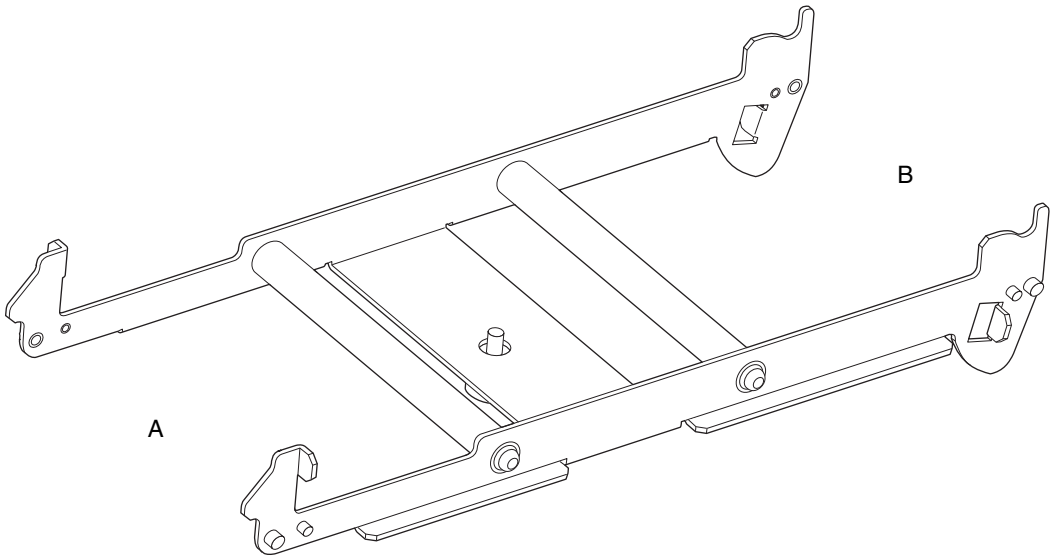


6.5.1 Replacing a CPU Module

To replace the CPU module, use the CPU Module insertion/extraction tool. Side A is for insertion, and side B is for extraction. The CPU Module insertion/expansion tool is stored inside the server. In the SPARC Enterprise M8000 server, the tool can be found on the left-side wall when the front door of the server is open. In the SPARC Enterprise M9000 server base cabinet, the tool can be found on the upper part of the unit when the rear door is open.

In the SPARC Enterprise M9000 server expansion cabinet, there is no insertion/extraction tool.

FIGURE 6-13 CPU Module Insertion/Extraction Tool



1. **Remove the CPU Module.**

   a. **Insert the tips on the extraction side of the CPU Module insertion/extraction tool (B) under the CPU Module guide pins. Insert the shorter guide pin into the groove of the guide lock of the CMU.**

FIGURE 6-14 Set CPU Module Insertion/Extraction Tool

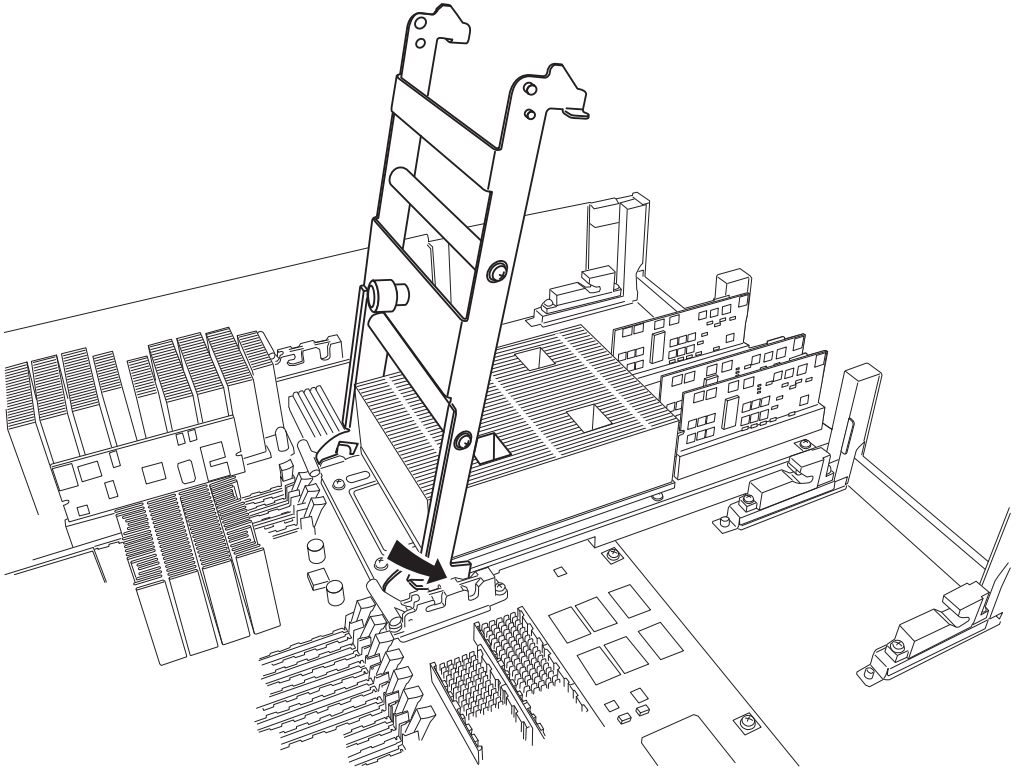
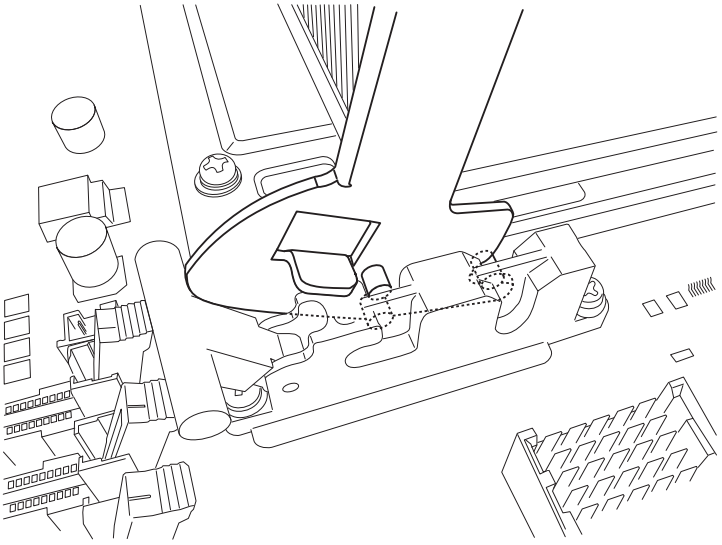


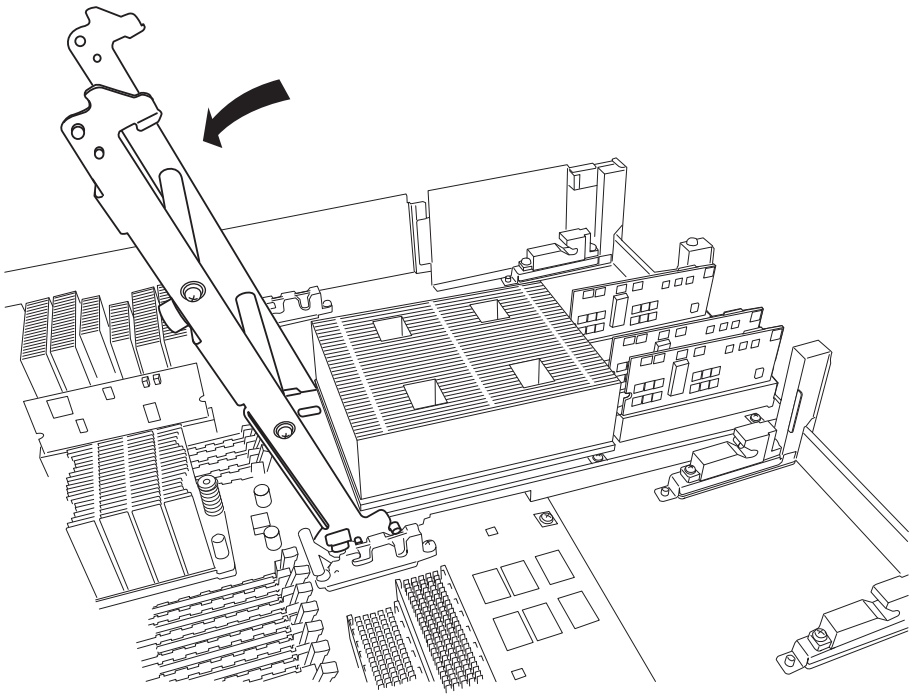
FIGURE 6-15 CMU Guide Lock (Enlarged)



Caution – When using the CPU Module insertion/extraction tool, make sure that it is set in position and used in the manner shown in the figure. If the CPU Module insertion/extraction tool is set and used in a different direction from the figure, serious damage may result.

b. Tilt the CPU Module insertion/extraction tool to the DIMM side, and pull up the CPU Module to disengage the CMU connector.

FIGURE 6-16 Lever Up the CPU Module

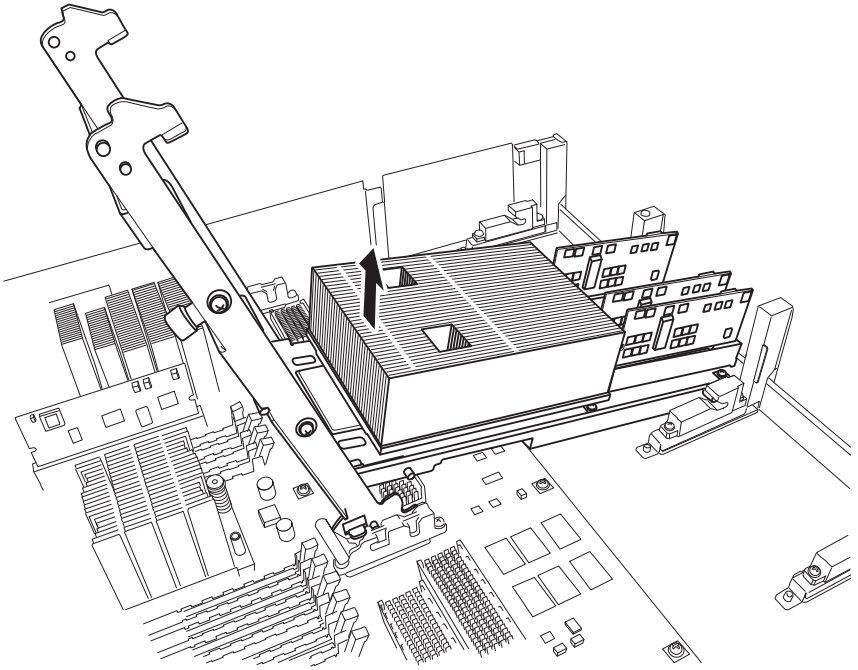


Caution – When tilting the CPU Module insertion/extraction tool toward the DIMM, do not tilt it to such an extent that the CPU Module is raised beyond its limit height.

Caution – Be sure not to remove the tool before removing the CPU Module. Otherwise, the CMU may be damaged.

c. Slide the CPU Module upward at an inclined angle to remove it from the guide lock.

FIGURE 6-17 Remove the CPU Module



d. Remove the CPU Module insertion/extraction tool.

2. **Attach the replacement CPU Module.**

   a. **Slide and insert the guide pin on the DDC side of the CPU Module along the groove of the CMU guide lock.**

FIGURE 6-18 Set CPU Module on the Guide Lock (1)

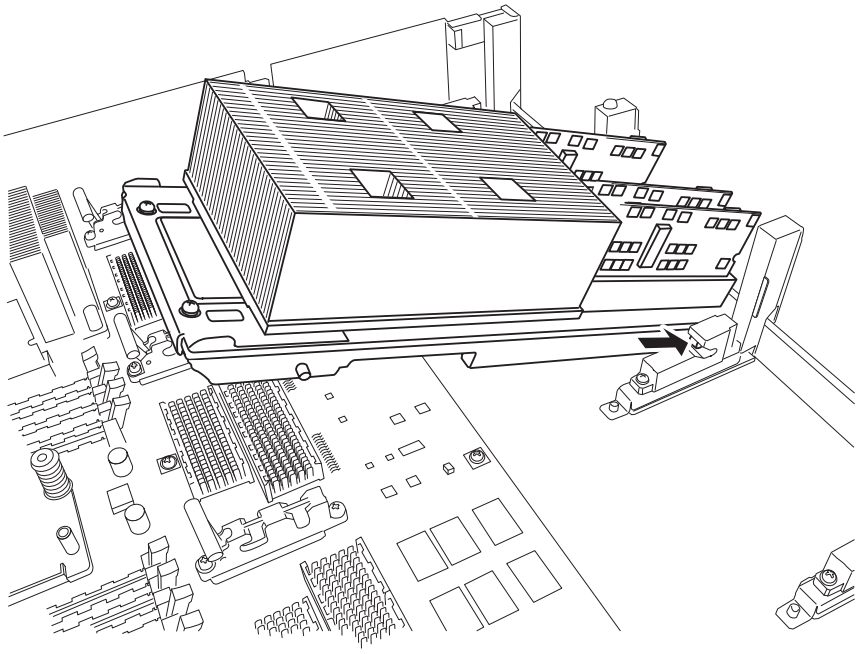
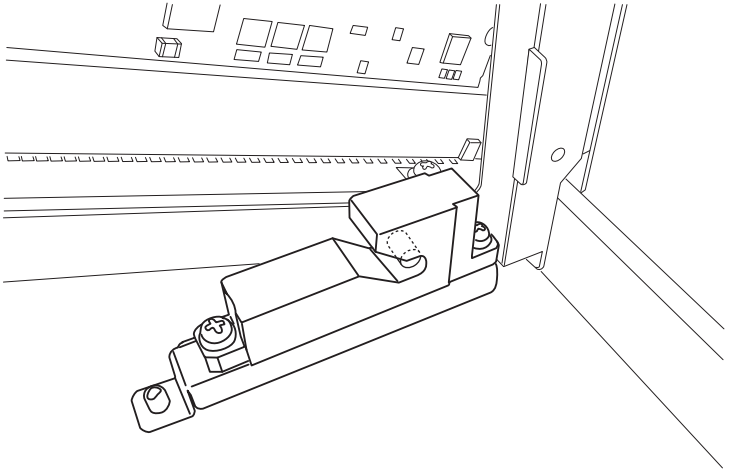
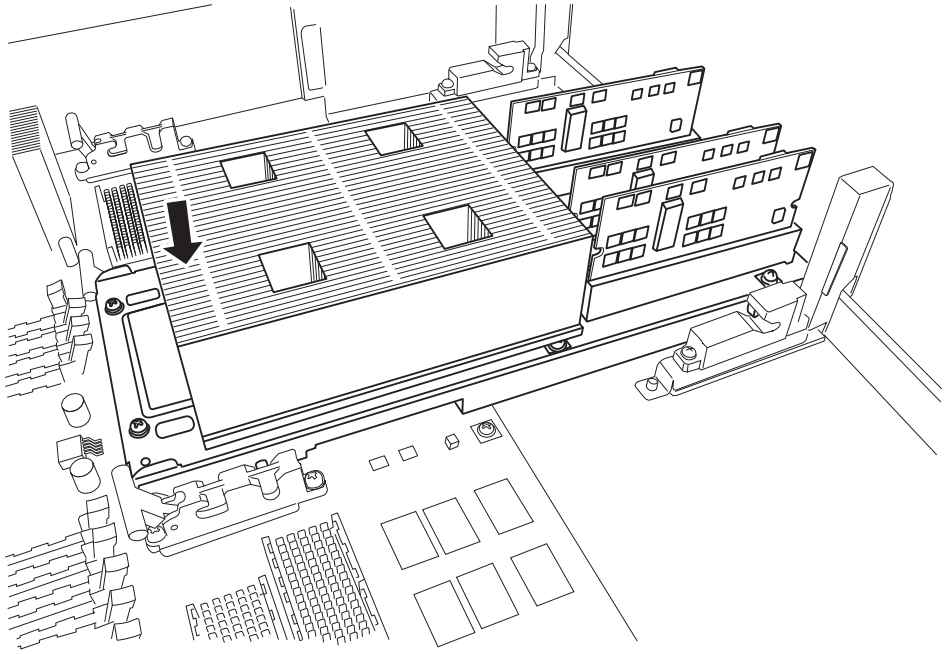


FIGURE 6-19 CMU Guide Lock (Enlarged)



b. Fit the guide pin on the heat sink side of the CPU Module into the groove of the CMU guide lock.

FIGURE 6-20 Set CPU Module on the Guide Lock (2)



Note – Each CPU Module has two guide pins and two CMU guide locks on the DDC side. Perform the work in such a way that both guide pins and both guide locks are mounted correctly.

---

c. Move the CPU Module back and forth to confirm that the pins are in the grooves.

d. Fit the shorter guide pin on the insertion side of the CPU Module insertion/extraction tool (A) into the CMU guide lock.

FIGURE 6-21 Set CPU Module Insertion/Extraction Tool

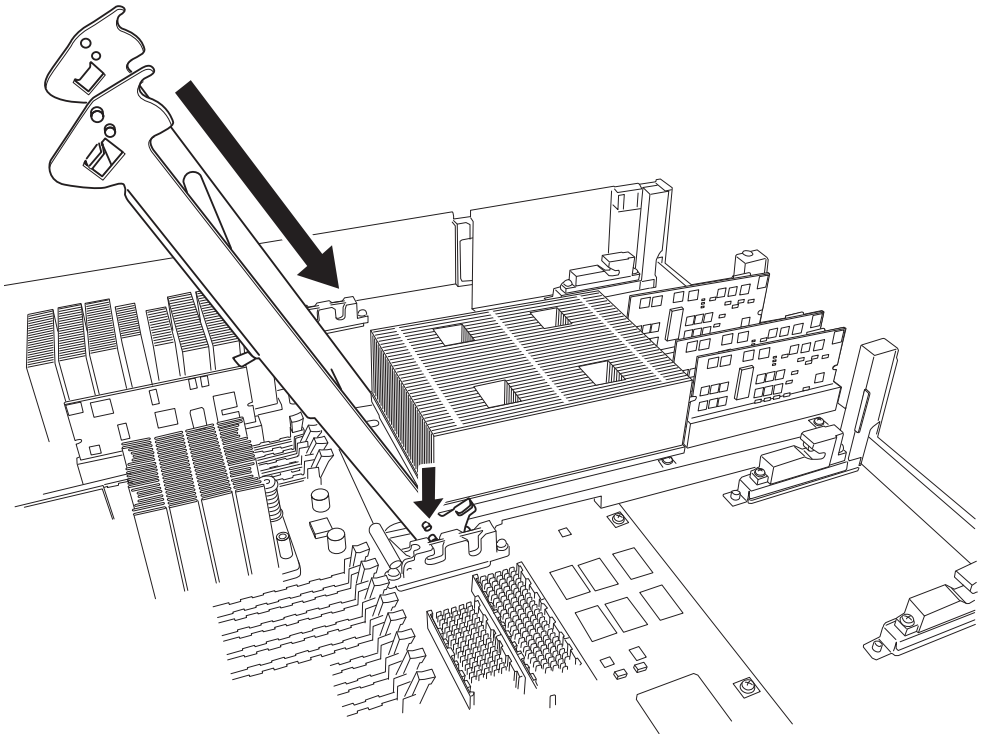
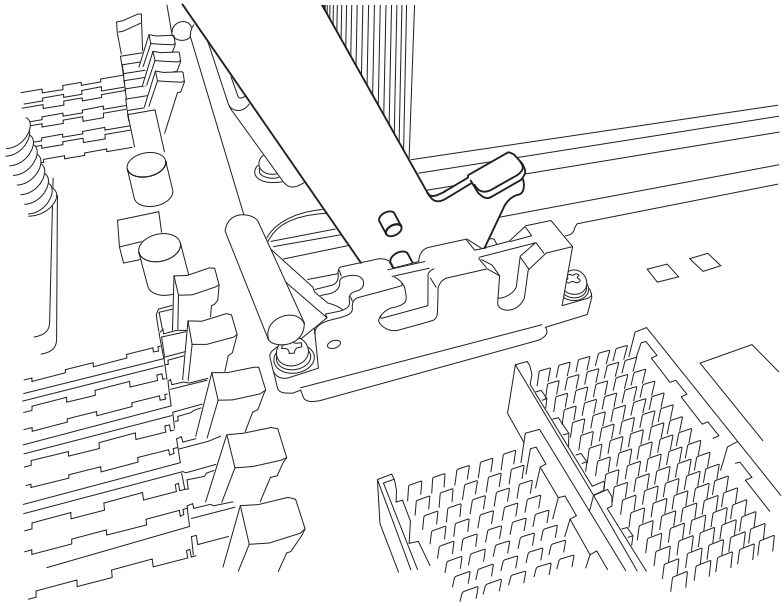


FIGURE 6-22 CMU Guide Lock (Enlarged)

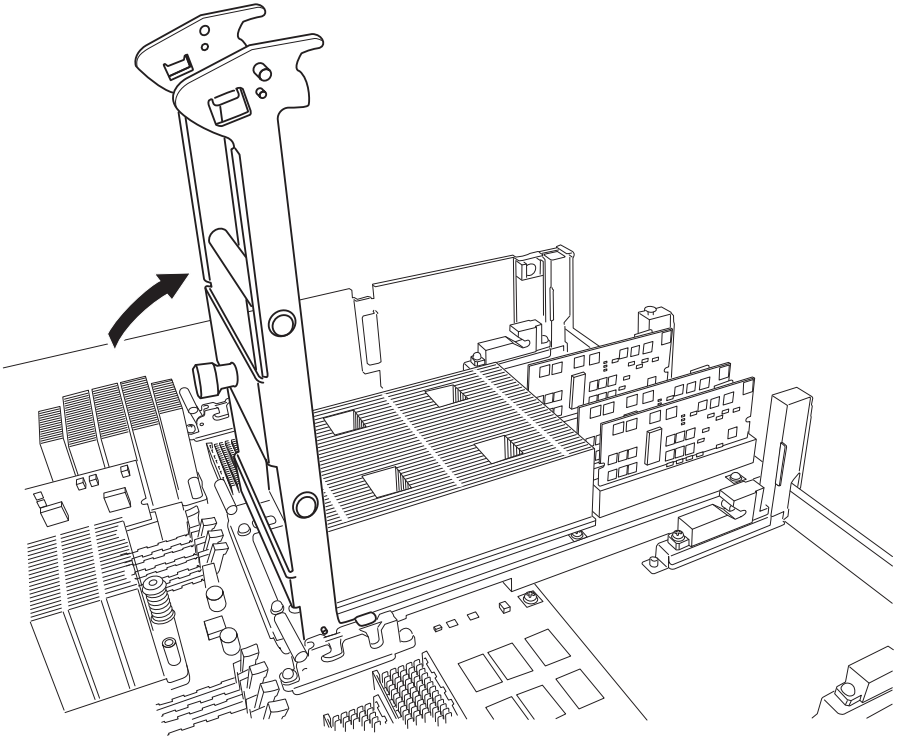


Caution – When using the CPU Module insertion/extraction tool, make sure that it is set in position and used in the manner shown in the figure. If the CPU Module insertion/extraction tool is set and used in a different direction from the figure, serious damage may result.

e. Raise the CPU Module insertion/extraction tool on the CPU Module side until the tool is standing upright, perpendicular to the ground.

The CPU Module and CMU connectors are coupled, and the CPU Module is mounted.

FIGURE 6-23 Mounting the CPU Module



Caution – Each CPU Module has two CMU guide locks. Perform the work in such a way that both guide locks are correctly set. Raise the insertion/extraction tool until it touches the stopper and is perpendicular to the ground. The connector is securely engaged when the insertion/extraction tool is raised vertically and it comes into contact with the stopper. Do not forcibly raise the insertion/extraction tool further.

f. Reverse Step 2 to Step e to remove the CPU Module insertion/extraction tool.

Caution – After using the CPUM insertion/extraction tool, be sure to return it to the storage location in the server.

6.5.2 Memory Module Mounting Conditions

This section describes memory module (DIMM) mounting conditions.

The CMU has 16 DIMMs as standard. The number of DIMMs that can be mounted on the CMU is 16 or 32, in sets of 16 DIMMs. Therefore, 16 DIMMs can be added to the standard product.

Caution – To replace or install a DIMM, do not fail to confirm the DIMM information and comply with the conditions to mount the memory.

6.5.2.1 Confirmation of DIMM Information

Confirm the DIMM information (size/rank) in the following way.

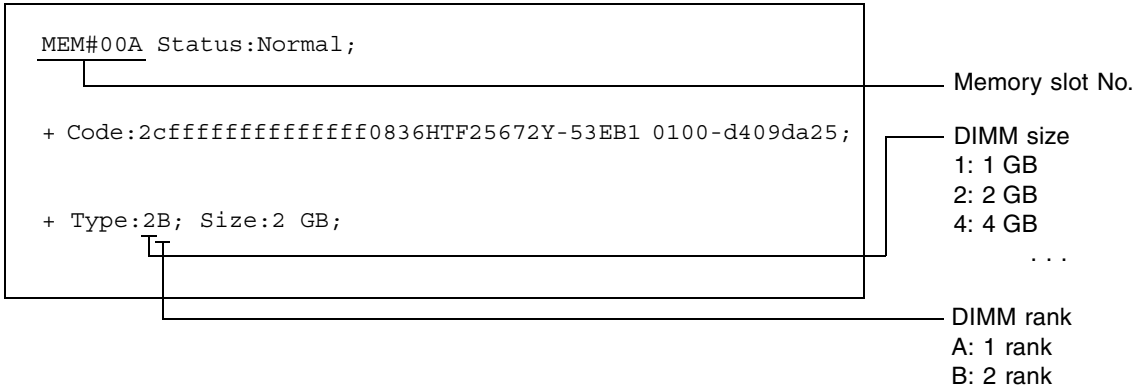
- Execute the `showhardconf`(8) command on XSCFU.

  The Type field shows the DIMM size and the DIMM rank.

```
XSCF> showhardconf
 ...
    CMU#1 Status:Normal; Ver:0101h; Serial:PP0642Z470 ;
        + FRU-Part-Number:CA06620-D001 A8 ;
        + Memory_Size:64 GB;
    ...
        MEM#00A Status:Normal;
            + Code:2cffffffffffffff0836HTF25672Y-53EB1 0100-d409da25;
            + Type:2B; Size:2 GB;
        MEM#00B Status:Normal;
            + Code:2cffffffffffffff0836HTF25672Y-53EB1 0100-d409da1e;
            + Type:2B; Size:2 GB;
        MEM#01A Status:Normal;
            + Code:2cffffffffffffff0836HTF25672Y-53EB1 0100-d409da22;
            + Type:2B; Size:2 GB;
        MEM#01B Status:Normal;
            + Code:2cffffffffffffff0836HTF25672Y-53EB1 0100-d409da23;
            + Type:2B; Size:2 GB;
        ...
```

FIGURE 6-24 shows an example of how to read the DIMM information displayed in the Type field.

FIGURE 6-24 Example of Reading DIMM Information

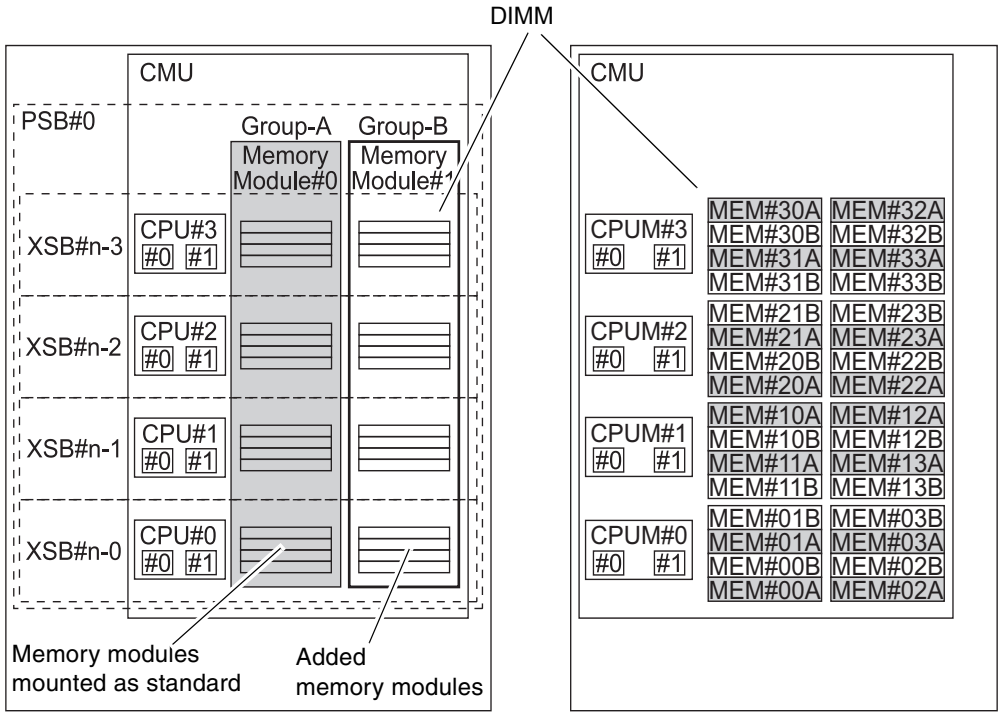


6.5.2.2 DIMM Mounting Conditions

- Memory modules are added in sets of 16 DIMMs.
- The DIMMs mounted in the MEM#xxA slot are defined as Group A. The DIMMs mounted in the MEM#xxB slot are defined as Group B. The standard memory modules are included in Group A.
- The memory size of Group A is equal to or greater than that of Group B.
- Group B need not always include memory modules.
- Mount memory modules of the same size and rank in each group. Memory modules of different sizes or ranks cannot be mounted in a single group.

Note – When you upgrade using larger capacity memory than the capacity of Group-A, move the memory mounted in Group-A to Group-B, and then mount the upgrade memory to Group-A.

FIGURE 6-25 Memory Mounting Conditions



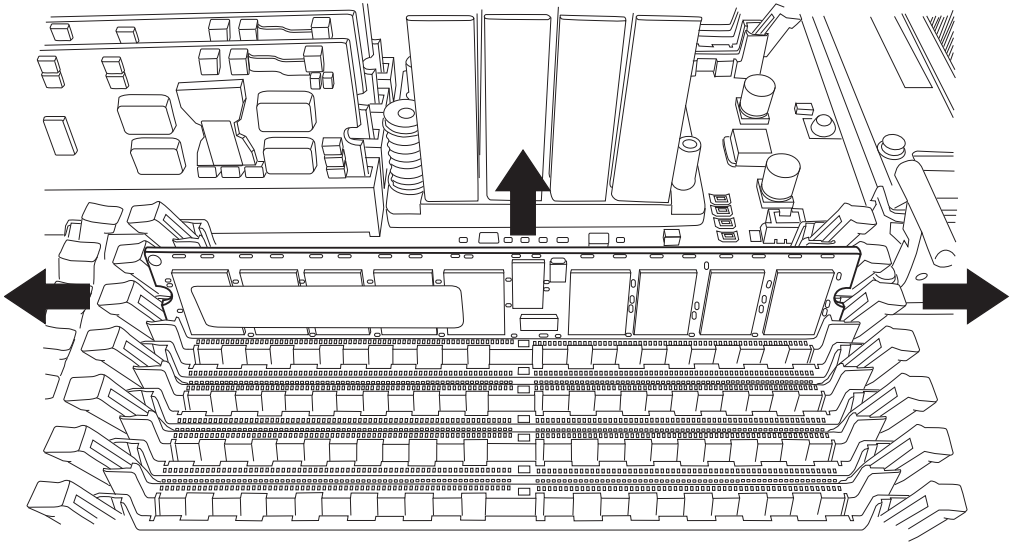
Conceptual diagram of
CPU and memory module locations

Mounting locations of
CPUs and memory modules

6.5.3 DIMM Replacement

1. **Open outward the tabs of the connector in which the DIMM to be replaced is mounted, and pull the DIMM out vertically.**

FIGURE 6-26 Removing the DIMM



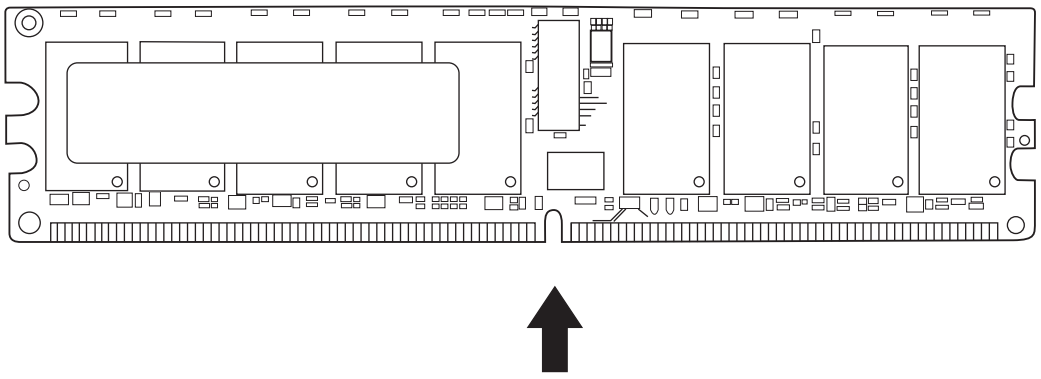
Note – While grasping both ends of the DIMM, pull it out vertically.

---

2. Perform the above operation in reverse order to mount the DIMM.

Note – To mount DIMM, position the notch of DIMM to the corresponding part of the connector.

FIGURE 6-27 Notch of DIMM



CHAPTER 7

I/O Unit (IOU) Replacement

This chapter explains the replacement procedures for the I/O unit (IOU). It covers the following:

- Section 7.1, "Overview of the IOU" on page 7-2
- Section 7.2, "Active Replacement and Hot Replacement" on page 7-8
- Section 7.3, "Cold Replacement" on page 7-17

There are three methods for replacing an IOU: active replacement, hot replacement and cold replacement. For the definition of each type of method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

In case of the SPARC Enterprise M8000 server, when you do maintenance on the I/O unit, the cables connected to the unit which mounted in the rack space for the SPARC Enterprise M8000 server must be properly routed. For details, see Section 4.7, "Cable Routing of the SPARC Enterprise M8000 Server" on page 4-34.

Note – To do maintenance on the IOU or the FAN unit of the SPARC Enterprise M8000 server, push aside the cables.

Note – When mounting an IOU, also mount the CPU/memory board (CMU) whose component number represents the same mounting location as the IOU.
Example: Mount IOU#1 together with CMU#1.

Note – In hot replacement of an IOU, the CMU whose component number represents the same mounting location as the IOU must be disconnected from the domain. Neither the DR operation for only an IOU nor hot replacement of only an IOU are possible.

Caution – Adjust the positioning of the routes appropriately so that the cables do not cover a PCI cassette at the front of an IOU in the SPARC Enterprise M8000 server.

7.1 Overview of the IOU

This section provides an overview of IOUs and describes their mounting locations.

Each IOU consists of one I/O board (IOB), eight PCI slots, and up to four hard disk drives (HDD). A PCI card or link card is mounted in a PCI slot by using a PCI cassette. For slots in which no PCI card or link card is mounted, a filler panel may occupy the slot. When an IOU is replaced, these mounted components (PCI cassettes, PCI cards, HDDs, and other components) must be remounted. These mounted parts must be remounted at the same locations in the new IOU as their original pre-swap mounting locations.

FIGURE 7-1, FIGURE 7-2, FIGURE 7-3, FIGURE 7-4, and FIGURE 7-5 indicate the mounting locations of IOUs.

FIGURE 7-1 IOU Mounting Locations (Rear of the M8000)

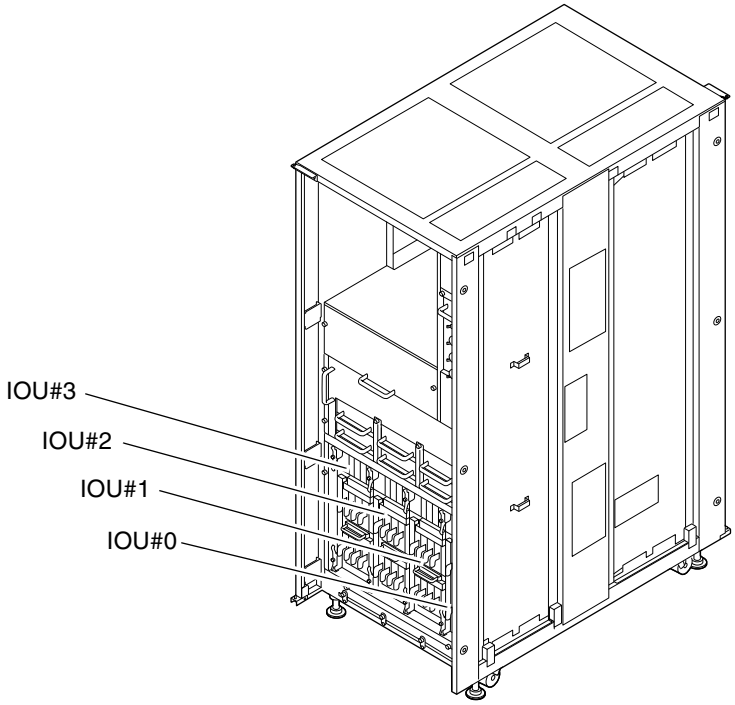


FIGURE 7-2 IOU mounting Locations (Front of the M9000 Base Cabinet)

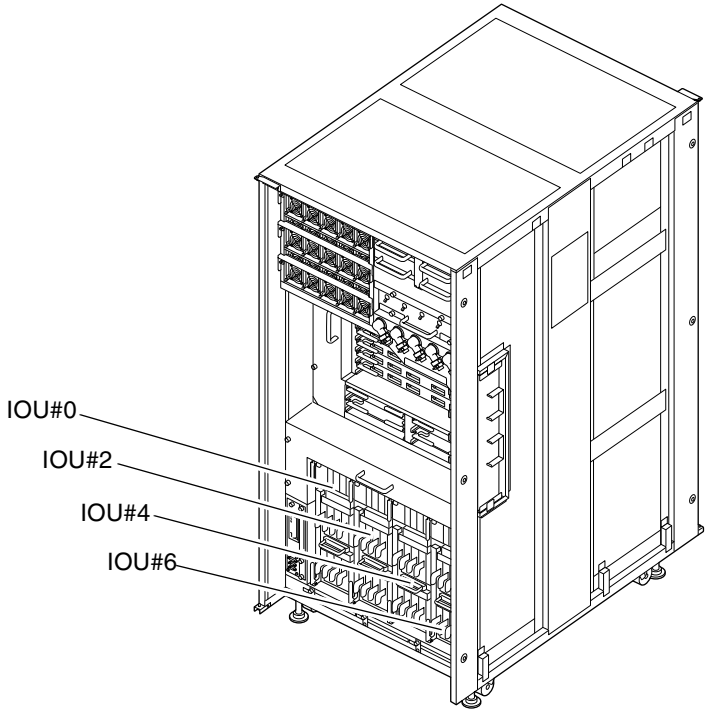


FIGURE 7-3 IOU Mounting Locations (Rear of the M9000 Base Cabinet)

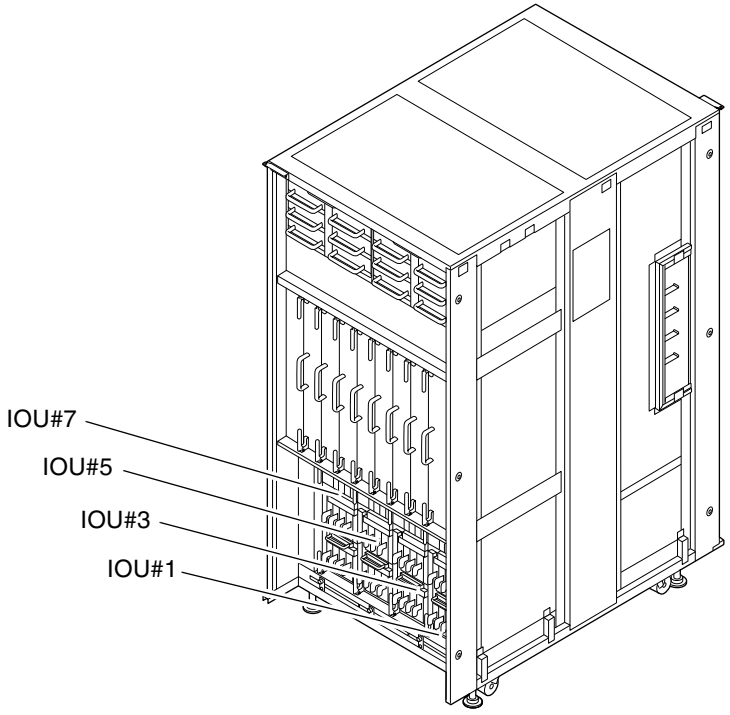


FIGURE 7-4 IOU Mounting Locations (Front of M9000 with the Expansion Cabinet)

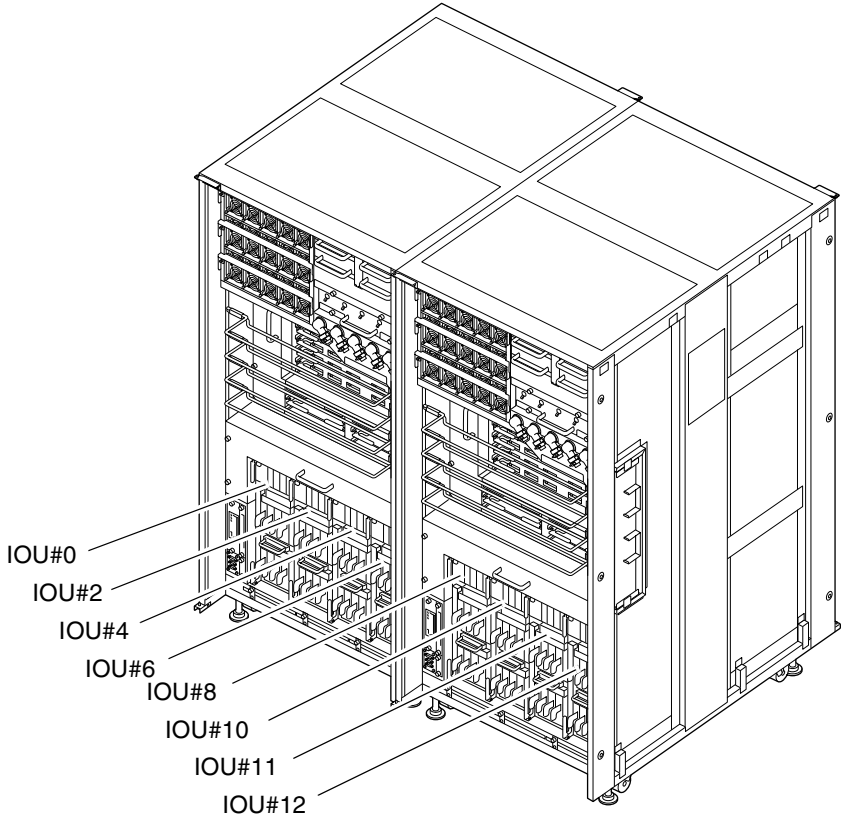


FIGURE 7-5 IOU Mounting Locations (Rear of M9000 with the Expansion Cabinet)

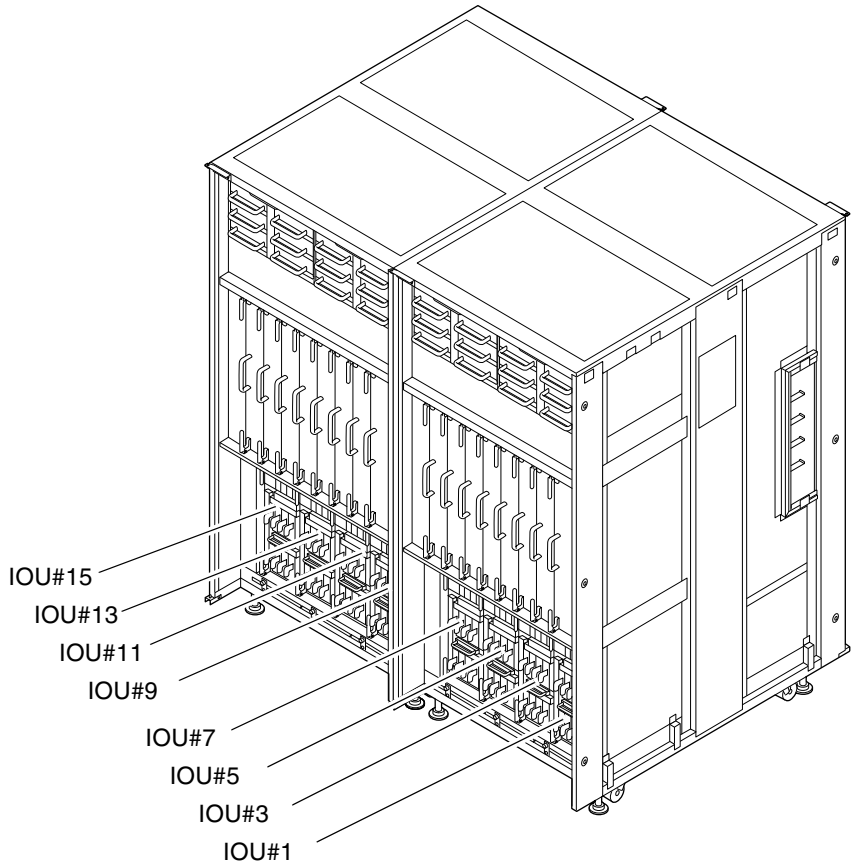


TABLE 7-1 lists the abbreviated names and component numbers of the IOUs.

TABLE 7-1 Abbreviated Names and Component Numbers of IOUs

Model name	Abbreviated names and numbers
M8000	IOU#0 to 3
M9000 base cabinet	IOU#0, 2, 4, and 6 (front) IOU#1, 3, 5, and 7 (rear)
M9000 expansion cabinet	IOU#8, 10, 12, and 14 (front) IOU#9, 11, 13, and 15 (rear)

7.2 Active Replacement and Hot Replacement

The active replacement procedure and hot replacement procedure are almost the same. This section explains both procedures together. Each step that is different between these procedures is distinguished by "Active replacement" or "Hot replacement" as a header. The main difference between active replacement and hot replacement is as follows:

- Active replacement: The CMU of an IOU is disconnected from or configured into a domain by dynamic reconfiguration (DR).
- Hot replacement: A domain must be stopped and restarted.

The procedure for active replacement and hot replacement is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching IOU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Check whether the CMU that is connected to the IOU to be replaced (the target CMU) is logically divided and what domains are affected by the replacement.**

   a. **Log in to the XSCF from a terminal connected to the XSCF, and execute the `showfru` command to check whether the target CMU is logically divided.**

   b. **If it is logically divided, execute the `showdcl` command to check whether the target CMU and another CMU comprise a domain.**

   c. **Execute the `showboards` command to check the use states of the devices and resources in the CMU.**

   For details on how to log in to the XSCF and of commands, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*. For details of commands, see also the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

3. **Prepare the IOU that is to be replaced.**

- Active replacement:

  From the terminal connected to the XSCF, execute the `deleteboard` command to dynamically disconnect the target CMU from all the domains that have been recognized in Step 2 as including the target CMU. (The IOU status can be checked by executing the `showboards` command.)

  To execute this command, you need the privilege of platform administrator (`platadm`) or domain administrator (`domainadm`). For details, see Section 4.2.1, "Disconnecting a FRU from a Domain" on page 4-3, and the *SPARC Enterprise M4000/M5000/M8000/M9000 Servers Dynamic Reconfiguration (DR) User's Guide* . For details on how to log in to XSCF, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

- Hot replacement:

  From the terminal connected to the XSCF, select all the domains that have been recognized in Step 2 as including the CMU to be replaced, and execute the `poweroff -d` command to shut down the domains. (The IOU status can be checked by executing the `showboards` command.)

  Domain administrator authority is required for executing this command. For details on how to log in to XSCF, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

4. **Use the maintenance menu to select the replacement target IOU. (The maintenance menu is used up to Step 14.)**

   The fieldeng permission is required for executing this command.

   a. **From the console that is connected to XSCF, log in to XSCF, and execute the `replacefru` command.As shown in FIGURE 7-6, the initial page of the maintenance menu is displayed.**

FIGURE 7-6 Initial Page of the Maintenance Menu

```
------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. CMU/IOU(CPU Memory Board Unit/IO Unit)
2. FAN(Fan Unit)
3. PSU(Power Supply Unit)
4. XSCFU(Extended System Control Facility Unit)
5. DDC_A(DDC for BP_A)
------------------------------------------------
Select [1-5|c:cancel] :
```

Note – DDC_A is displayed only for the M8000.

b. **From the replacement parts list in the maintenance menu, select 1, "CMU/IOU."**

c. **From here, perform the operation according to the guidance displayed in the maintenance menu.**

   Check the states of LEDs (POWER LED: off; CHECK LED: blinking) on the IOU to be replaced, and begin the actual replacement work when a message instructing the user to replace the target IOU is displayed. Leave the maintenance menu as is until Step 13.

5. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

6. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

7. **Remove the IOU to be replaced.**

   a. **Using a Phillips screwdriver, turn the knob screws securing the upper and lower eject/lock levers 90 to 180 degrees to unlock the levers. (Turn the knob screw while lightly pulling the lever by one hand.)**

   b. **Unlock the eject/lock levers to pull the IOU off the backplane.**

   c. **While grasping the handle at the front of the IOU, pull the IOU out partially until the [NEAR TO END] label comes into view.**

   d. **Raise the handle at the upper part of the IOU.**

   e. **While grasping the front and upper handles of the IOU, pull it out slowly from the slot.**

Note – To upgrade the IOU, remove the dummy (filler) unit before mounting the IOU to be added. Since the same levers are used on the dummy (filler) unit, please operate the eject/lock levers in the same manner.

Caution – An IOU with all options mounted weighs about 21 kg.

FIGURE 7-7 Removing the IOU (Rear of M8000)

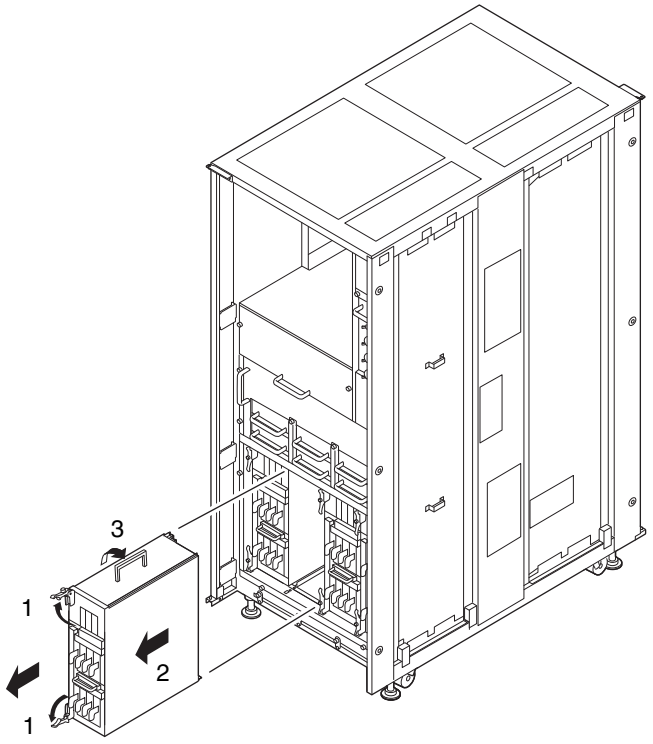


FIGURE 7-8 Removing the IOU (Front of M9000)

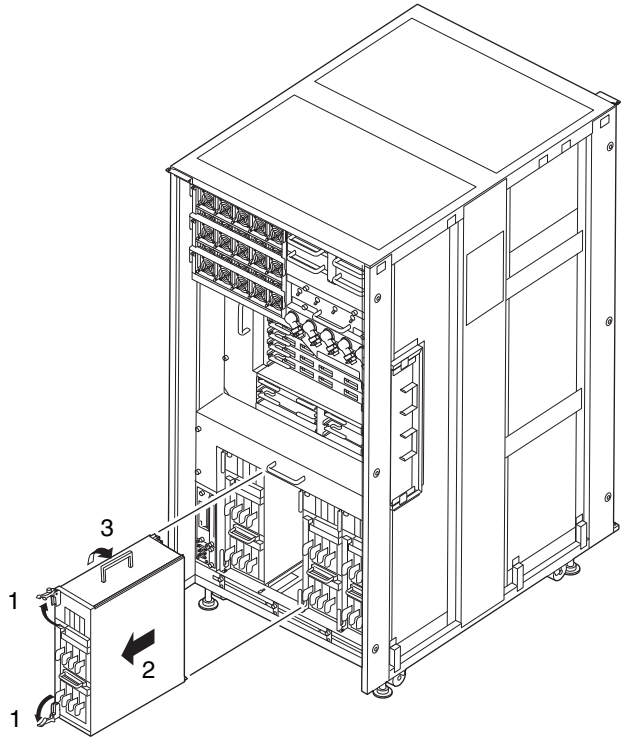
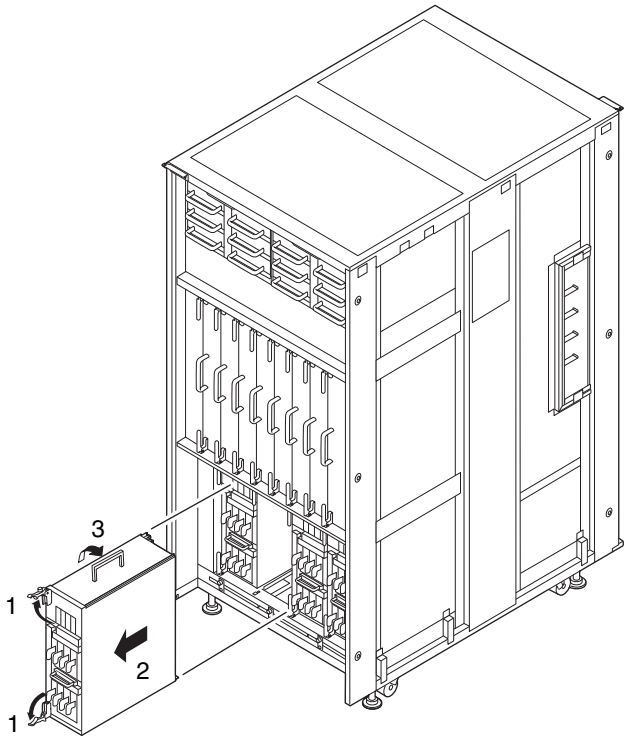


FIGURE 7-9 Removing the IOU (Rear of M9000)



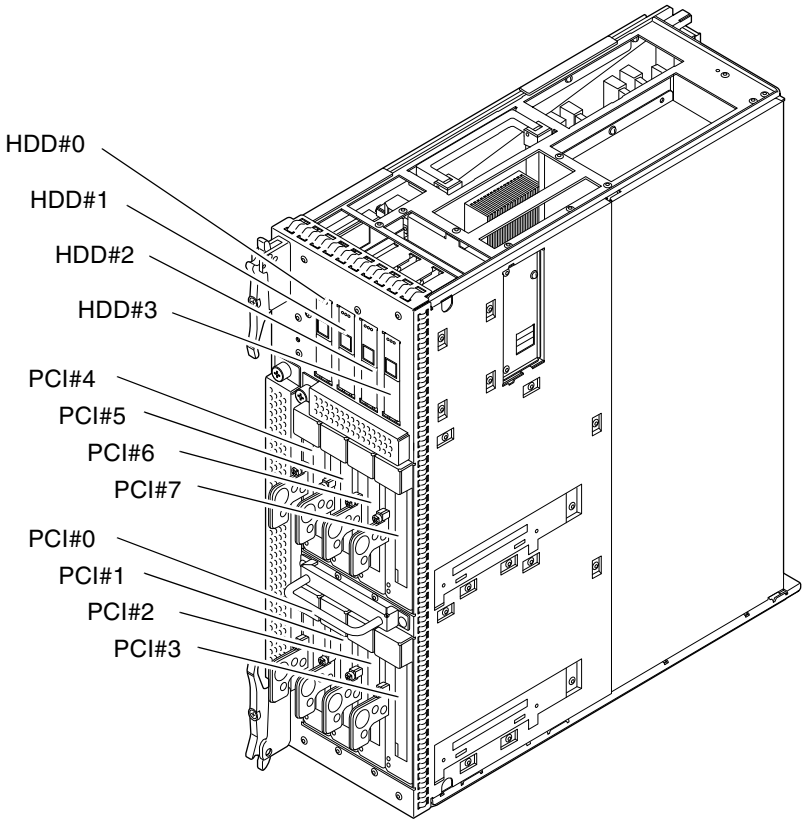
8. **Place the removed IOU on an antistatic mat.**

9. **Dismount the HDD (or filler panel) and the PCI cards on the detached IOU, and remount them all on the replacing IOU. As for the PCI cassette, which serves as the housing for PCI card, use the one which is mounted on the replacing IOU. For the remounting procedures, see** Chapter 12 **and** Chapter 13**.**

Note – Be sure to remount the PCI cards, filler boards, and HDDs in the same locations in the replacement IOU as their mounting locations in the removed IOU.

Note – When mounting PCI cards and HDDs, insert them all the way in so that the connectors are fully engaged.

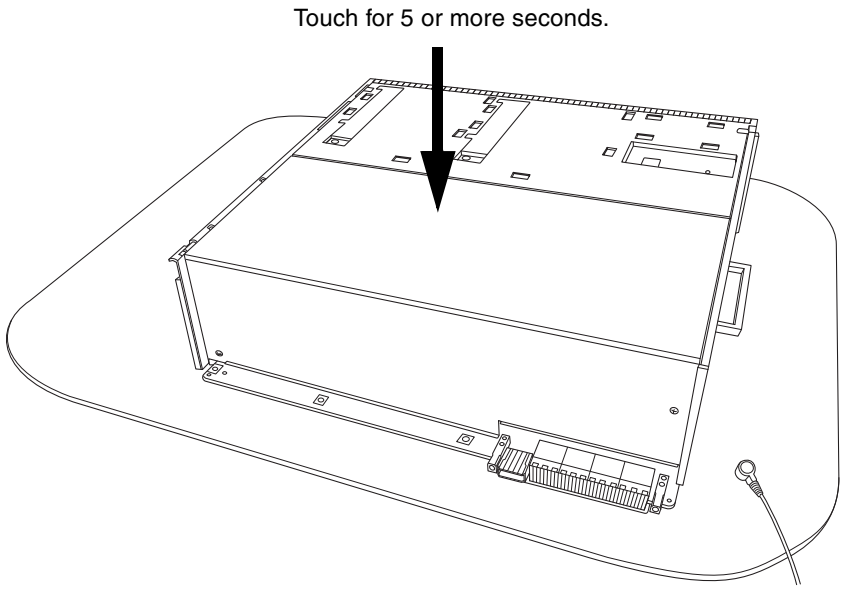
FIGURE 7-10 Locations of PCI Slots and HDDs



10. **Place the replacement IOU on the antistatic mat, and touch the metallic chassis for five or more seconds with your bare hand wearing the antistatic wrist strap, to remove static electricity.**

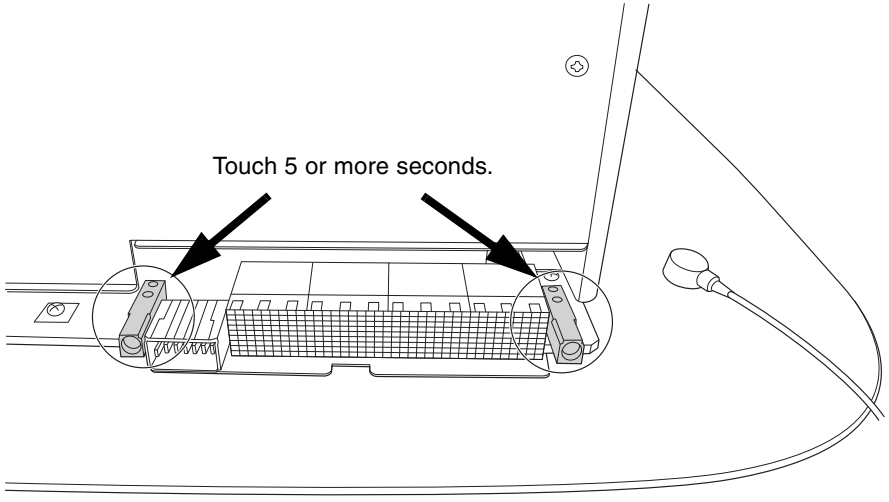
Caution – To mount a new CMU, ensure that the board is placed on a grounded antistatic mat. Then, touch it with your bare hand while wearing a properly connected antistatic wrist strap. This will remove any static electricity before installing it in the server. Take care not to damage the connector on the CMU edge.

FIGURE 7-11 Metallic Chassis (IOU)



11. Touch each of the designated points on the guide blocks for 5 or more seconds with your bare hand wearing the antistatic wrist strap.

FIGURE 7-12 Guide Block (IOU)



12. **Mount the replacement IOU by following the removal instructions in Step 7 in reverse order. Align the IOU with the slot guides, insert it carefully, and secure it firmly.**

    Push the eject/lock levers as far as they will go, and then push the knob screws on the upper and lower eject/lock levers to lock them in position. When the knob screws remain in position, the IOU is securely mounted.

Note – Mount the dummy (filler) unit in the same manner as IOU. Since the same levers are used on the dummy (filler) unit, please operate the eject/lock levers in the same manner.

Note – In hot addition of an IOU, mount the CMU and IOU in the proper location. Otherwise, the added IOU may not operate.

Caution – Do not forcibly push the IOU when inserting it, even if it is not moving smoothly. If the IOU is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

---

13. **Go back to the terminal that is connected to XSCF, and perform the input operation according to the instructions of the maintenance menu that is displayed after the replacement.**

    a. **Because the displayed messages are different between active replacement and hot replacement, perform the operation according to the instructions for each case. When the display of the maintenance menu returns to the initial page, the operation is completed.**

    b. **Exit the maintenance menu.**

14. **Configure the IOU into the system.**

- Active replacement:

  Configure dynamically the IOU into a domain by using the `addboard` command. Do this operation for all the domains that have been recognized in Step 2 as including the target CMU.

  For details, see Section 4.2.2, "Disconnecting and Replacing a FRU" on page 4-5, and the *SPARC Enterprise M4000/M5000/M8000/M9000 Servers Dynamic Reconfiguration (DR) User's Guide*.

- Hot replacement:

  From the console that is connected to XSCF, execute the `poweron -d` command of XSCF to turn on power to the domain.

  When the power to the domain is turned on, the power-on self test (POST) is performed. When ok prompt displayed on the console of relevant domain, POST is completed.

15. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for a replacement IOU, CPU, or DIMM, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

16. **Close the door on the server, and lock it.**

7.3 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching IOU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

---

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

3. **Stop (turn off power) all domains together. Take either of the following two actions:**
   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.
4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**
5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**
7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Remove the IOU to be replaced. (See FIGURE 7-7 - FIGURE 7-9)**

   a. **Using a Phillips screwdriver, turn the knob screws securing the upper and lower eject/lock levers 90 to 180 degrees to unlock the levers. (Turn the knob screw while lightly pulling the lever by one hand.)**

   b. **Unlock the eject/lock levers to pull the IOU off the backplane.**

   c. **While grasping the handle at the front of the IOU, pull the IOU out partially until the [NEAR TO END] label comes into view.**

   d. **Raise the handle at the upper part of the IOU.**

   e. **While grasping the front and upper handles of the IOU, pull it out slowly from the slot.**

Note – To upgrade the IOU, remove the dummy (filler) unit before mounting the IOU to be added. Since the same levers are used on the dummy (filler) unit, please operate the eject/lock levers in the same manner.

Caution – An IOU with mounted components in the maximum configuration weighs about 21 kg.

---

9. **Place the removed IOU on an antistatic mat.**

10. **Dismount the HDD (or filler panel) and the PCI cards on the detached IOU, and remount them all on the replacing IOU. As for the PCI cassette, which serves as the housing for PCI card, use the one which is mounted on the replacing IOU. For the remounting procedures, see Chapter 12 and Chapter 13.**

Note – Be sure to remount the PCI cards, filler boards, and HDDs in the same locations in the replacement IOU as their mounting locations in the removed IOU.

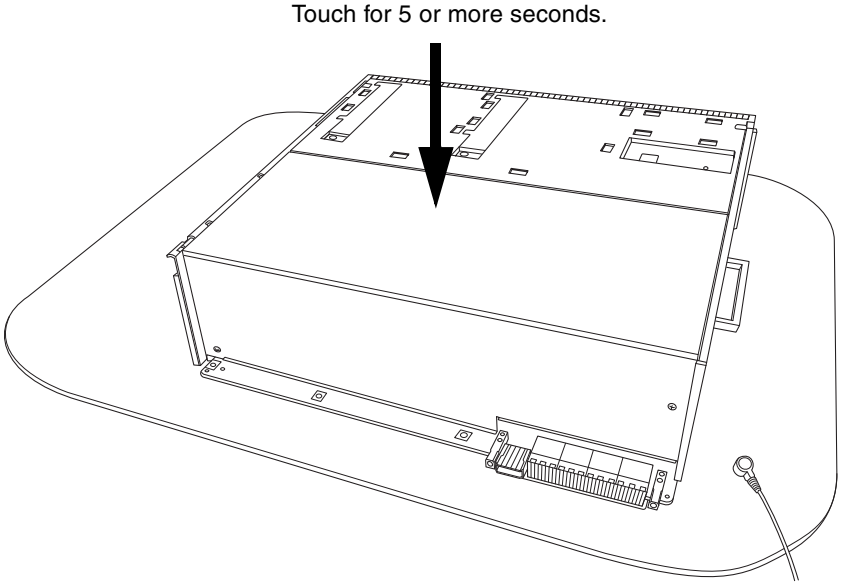
Note – When mounting PCI cards and HDDs, fully insert them so that the connectors are completely engaged.

---

11. **Place the replacement IOU on the antistatic mat, and touch the metallic chassis for five or more seconds with your bare hand wearing the antistatic wrist strap, to remove static electricity.**

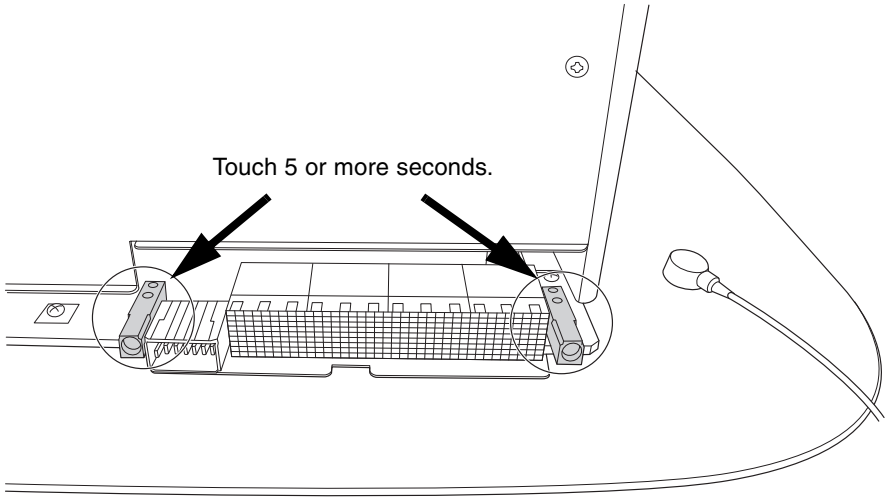
Caution – To mount a new CMU, ensure that the board is placed on a grounded antistatic mat. Then, touch it with your bare hand while wearing a properly connected antistatic wrist strap. This will remove any static electricity before installing it in the server. Take care not to damage the connector on the FRU edge.

FIGURE 7-13 Metallic Chassis (IOU)



12. **Touch each of the designated points on the guide blocks for 5 or more seconds with your bare hand wearing the antistatic wrist strap.**

FIGURE 7-14 Guide Block (IOU)



13. **Mount the replacement IOU by following the removal instructions in** Step 8 **in reverse order. Align the IOU with the slot guides, insert it carefully, and secure it firmly.**

    Push the eject/lock levers as far as they will go, and then push the knob screws on the upper and lower eject/lock levers to lock them in position. When the knob screws remain in position, the IOU is securely mounted.

Note – Mount the dummy (filler) unit in the same manner as IOU. Since the same levers are used on the dummy (filler) unit, please operate the eject/lock levers in the same manner.

Caution – Do not forcibly push the IOU when inserting it, even if it is not moving smoothly. If the IOU is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

Note – In addition of an IOU, mount the CMU and IOU in the proper location. Otherwise, the added IOU may not operate after power-on.

---

14. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

15. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

16. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From the console that is connected to XSCF, execute the `poweron -d` <*domain-id*> command of XSCF for the domain of the replacement target new IOU.

    Power to the specified domains is turned on.

    When the power to the domain is turned on, the power-on self test (POST) is performed. When ok prompt displayed on the console of relevant domain, POST is completed. For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

17. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement IOU (including PCI cards and HDDs), it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

18. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

19. **Close the door on the server, and lock it.**

CHAPTER 8

FAN Unit Replacement

This chapter explains the replacement procedures for the FAN unit (FANU). It covers the following:

- Section 8.1, “Overview of the FAN Unit” on page 8-2
- Section 8.2, “Active Replacement and Hot Replacement” on page 8-8
- Section 8.3, “Cold Replacement” on page 8-14

There are three methods for replacing a FAN unit: active replacement , hot replacement, and cold replacement. For the definition of each type of method, see Section 4.1, “Types of Replacement Procedures” on page 4-2.

In case of the SPARC Enterprise M8000 server, when you do maintenance on the FAN_B on the rear side, the cables connected to the unit which mounted in the rack space for the SPARC Enterprise M8000 server must be properly routed. For details, see Section 4.7, “Cable Routing of the SPARC Enterprise M8000 Server” on page 4-34.

Note – To do maintenance on the IOU or the FAN unit of the SPARC Enterprise M8000 server, push aside the cables.

Caution – Take care to prevent the cables from blocking the ventilation slits of the SPARC Enterprise M8000 server. (Fujitsu recommends running the cables above the handle of the FAN unit.)

8.1 Overview of the FAN Unit

This section provides an overview of FAN unit and describes their mounting locations.

Each FAN unit consists of two or three cooling fans, and two or more FAN unit are used for cooling components in a cabinet. There are two types of FAN unit: FAN_A (3-FAN unit), which is used commonly with the high-end server, and FAN_B (2-FAN unit), which is used only with the M8000. FAN units have an N+1 redundancy configuration, and active maintenance can be performed on them.

FIGURE 8-1, FIGURE 8-2, FIGURE 8-3, FIGURE 8-4, FIGURE 8-5, and FIGURE 8-6 indicate the mounting locations of FAN unit in the high-end servers.

FIGURE 8-1 FAN Mounting Locations (Front of the M8000)

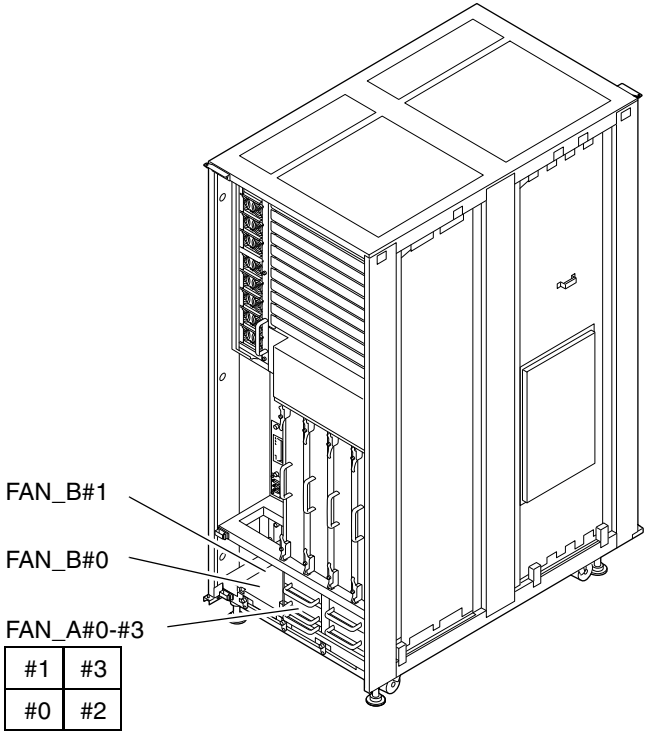


FIGURE 8-2 FAN Mounting Locations (Rear of the M8000)

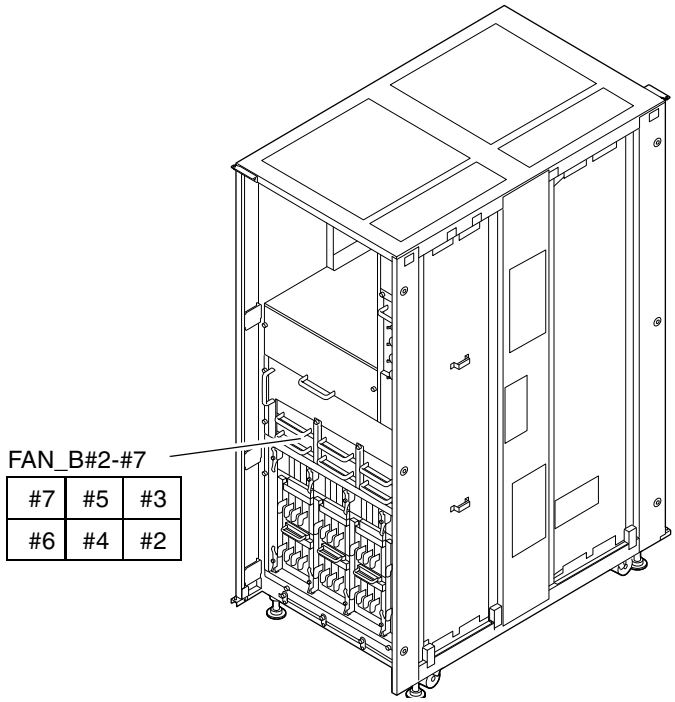


FIGURE 8-3 FAN Mounting Locations (Front of the M9000 Base Cabinet)

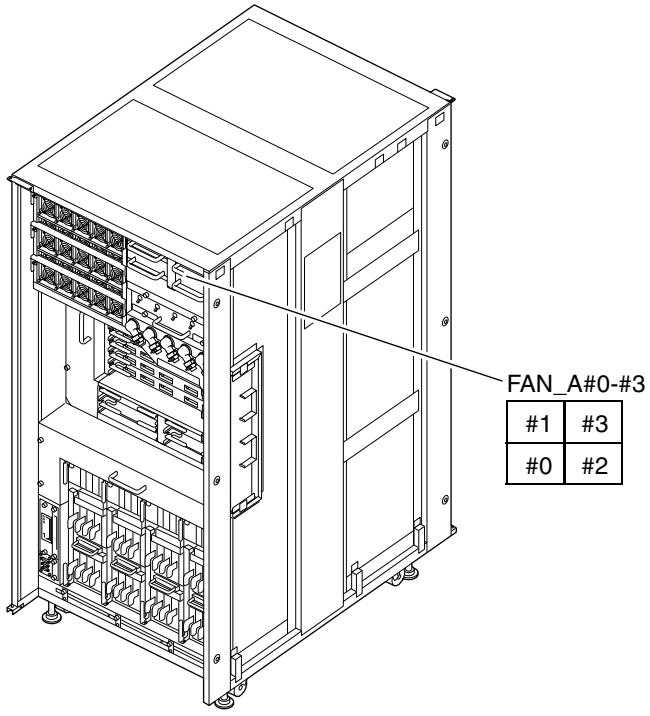


FIGURE 8-4 FAN Mounting Locations (Rear of the M9000 Base Cabinet)

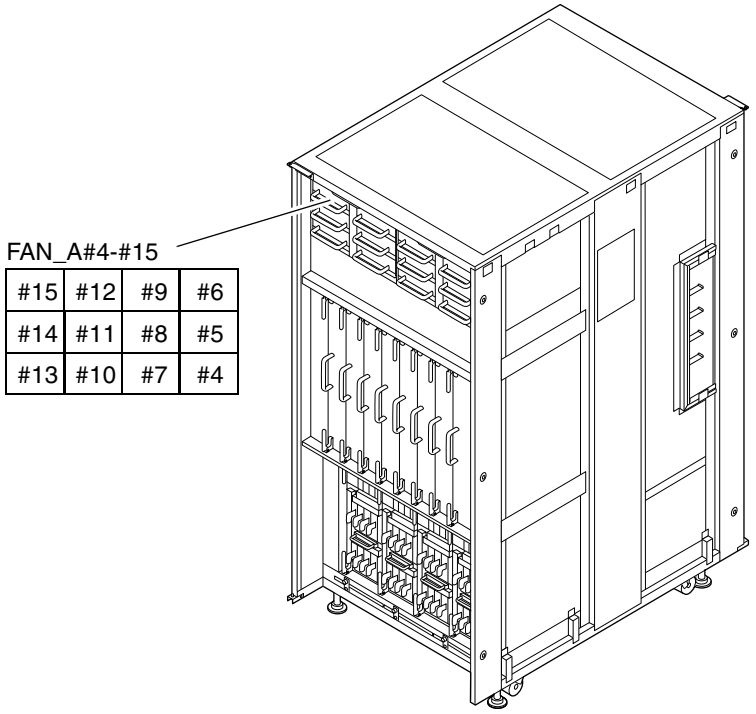


FIGURE 8-5 FAN Mounting Locations (Front of M9000 with the Expansion Cabinet)

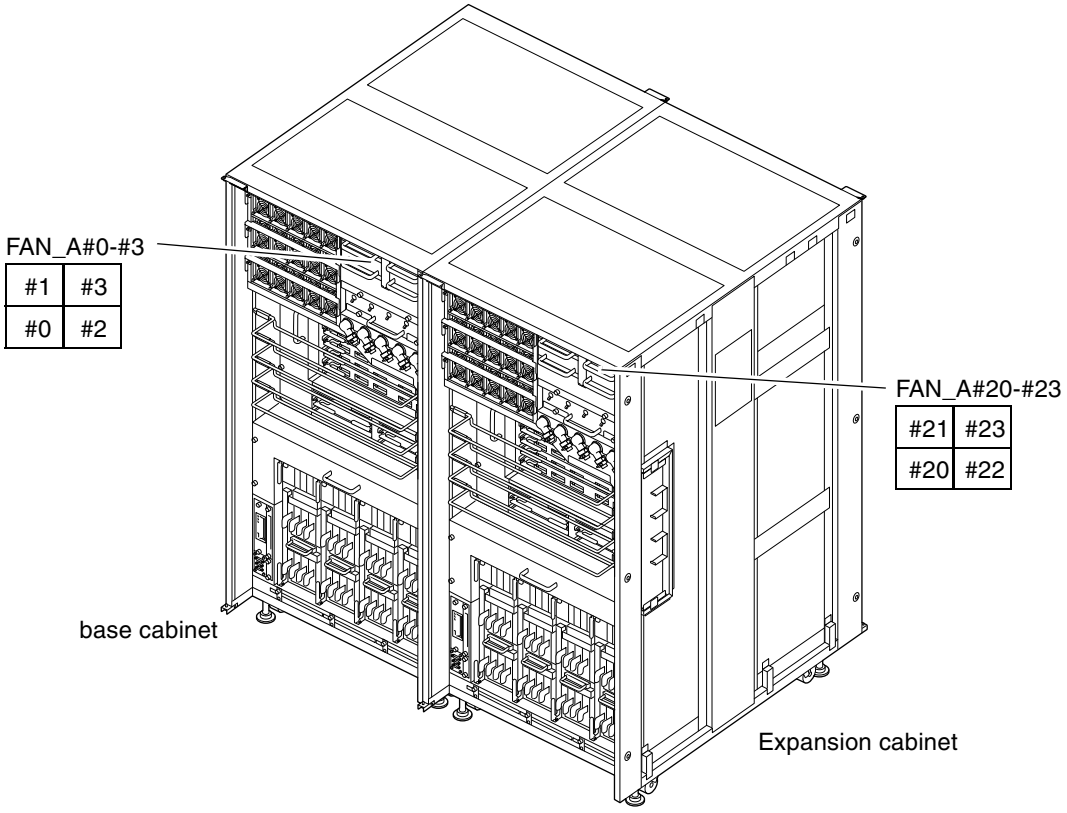


FIGURE 8-6 FAN Mounting Locations (Rear of M9000 with the Expansion Cabinet)

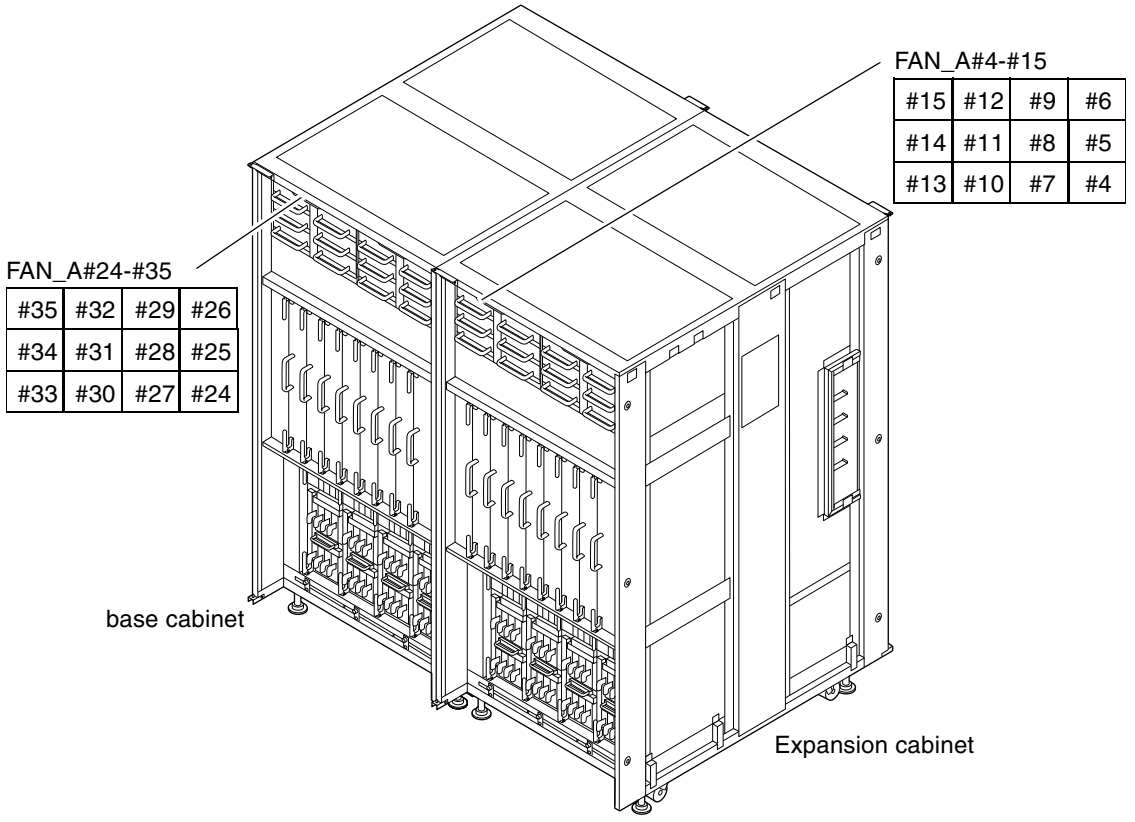


TABLE 8-1 lists the abbreviated names and component numbers of the FAN unit.

TABLE 8-1 Abbreviated Names and Component Numbers of the FAN Unit

Model name	Abbreviated names and numbers
M8000	FAN_A#0 to 3 (3-FAN unit, front) FAN_B#0, 1 (2-FAN unit, front) FAN_B#2 to 7 (2-FAN unit, rear)
M9000 base cabinet	FAN_A#0 to 3 (3-FAN unit, front) FAN_A#4 to 15 (3-FAN unit, rear)
M9000 expansion cabinet	FAN_A#20 to 23 (3-FAN unit, front) FAN_A#24 to 35 (3-FAN unit, rear)

8.2 Active Replacement and Hot Replacement

Caution – Each cabinet contains multiple FAN units so that the cooling specifications are satisfied even when one individual fan inside the FAN units fails. When replacing multiple FAN units, replace one at a time.

The active replacement procedure and hot replacement procedure for the FAN units are the same.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Use the maintenance menu to select a swap target FAN unit. (The maintenance menu is used up to Step 9.)**

   The fieldeng permission is required for executing this command.

   a. **From the console that is connected to XSCF, log in to XSCF, and execute the `replacefru` command.**

      As shown in FIGURE 8-7, the initial page of the maintenance menu is displayed.

FIGURE 8-7 Initial Page of the Maintenance Menu

```
------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. CMU/IOU(CPU Memory Board Unit/IO Unit)
2. FAN(Fan Unit)
3. PSU(Power Supply Unit)
4. XSCFU(Extended System Control Facility Unit)
5. DDC_A(DDC for BP_A)
------------------------------------------------
Select [1-5|c:cancel] :
```

Note – DDC_A is displayed only for the M8000.

---

b. From the replacement parts list on the maintenance menu, select 2, "FAN."

c. From here, perform the operation according to the instructions displayed in the maintenance menu.

Check the states of LEDs (POWER LED: off; CHECK LED: blinking) on the FAN unit to be replaced, and begin the actual replacement work when a message instructing the user to replace the target FAN unit is displayed. Leave the maintenance menu as is until Step 8.

3. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

4. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

5. **Using a Phillips screwdriver, loosen the knob screw of the fixing bracket of the FAN unit to release the bracket.**

6. **While grasping the handle of the FAN unit to be replaced, pull it out slowly from the slot.**

FIGURE 8-8 Removing the FAN Unit (Front of M8000)

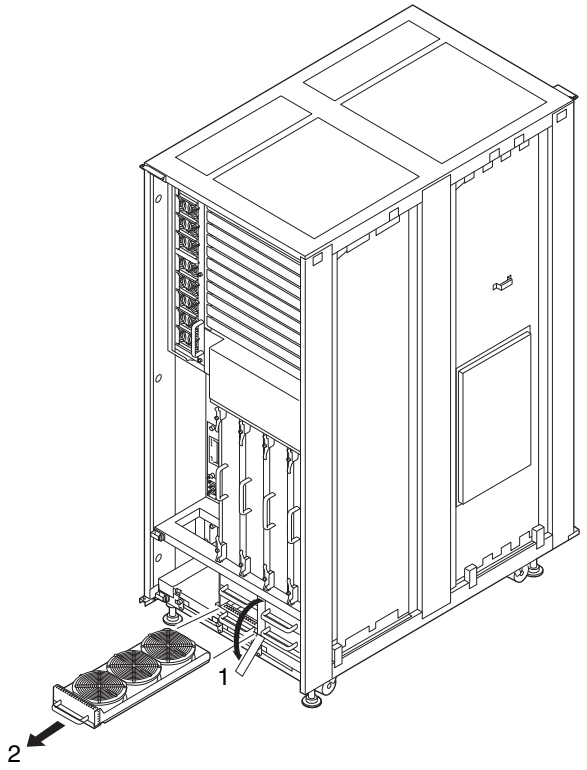


FIGURE 8-9 Removing the FAN Unit (Rear of M8000)

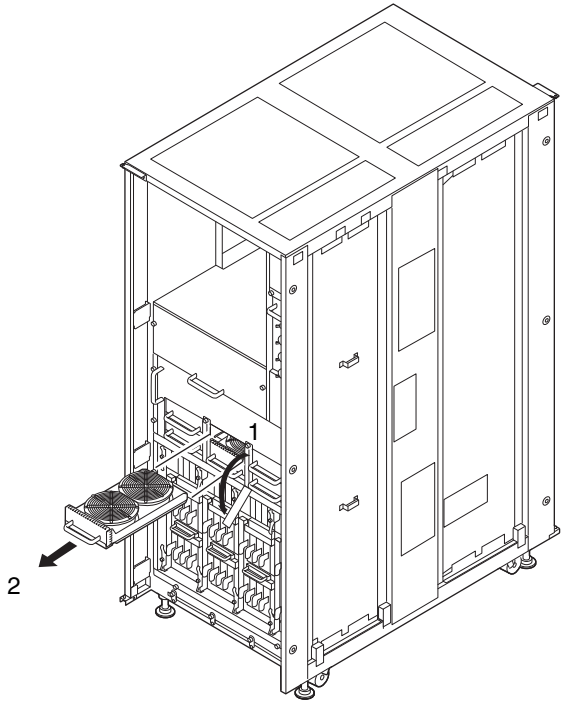


FIGURE 8-10 Removing the FAN Unit (Front of M9000)

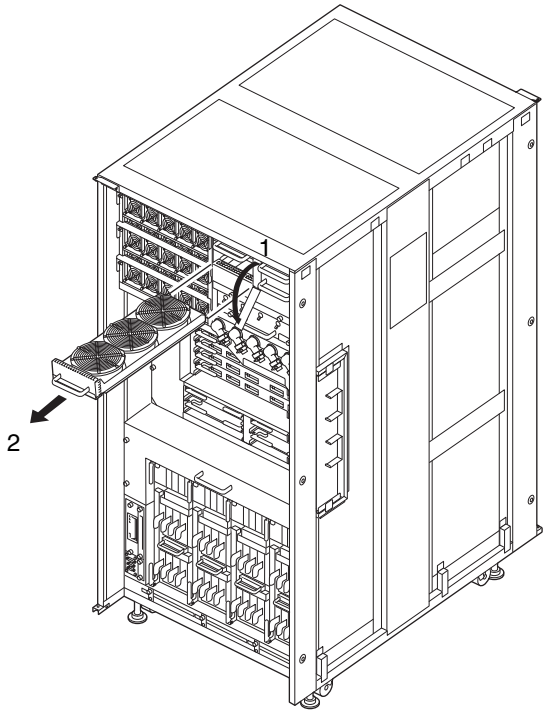
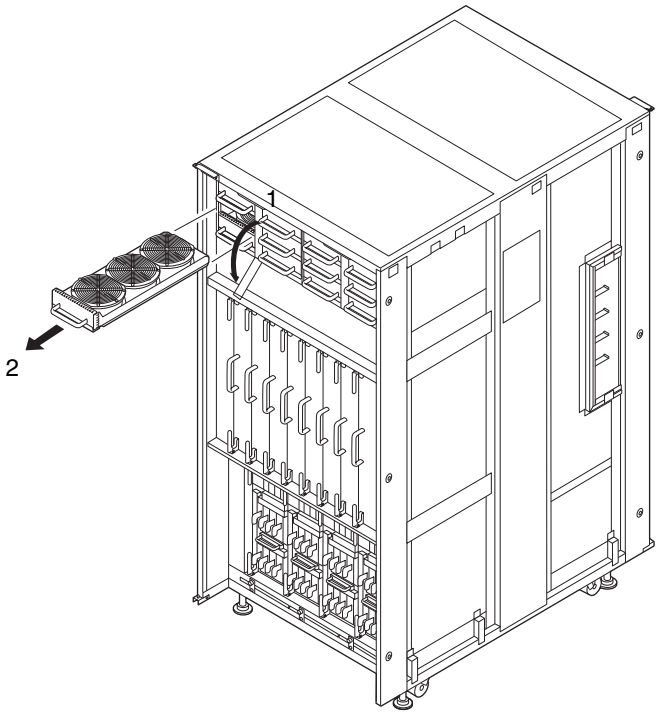


FIGURE 8-11 Removing the FAN Unit (Rear of M9000)



7. **Place the removed FAN unit on an antistatic mat.**

8. **Mount the replacement FAN unit by following the removal instructions in Step 5 and Step 6 in reverse order. Align the FAN unit with the slot guides, insert it carefully, and secure it firmly.**

Caution – Each cabinet contains multiple FAN unit so that the cooling specifications are satisfied even if one FAN unit fails. When replacing a FAN unit, however, replace it as quickly as possible.

Caution – Do not forcibly push the FAN unit when inserting it, even if it is not moving smoothly. If the FAN unit is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

9. **Go back to the terminal that is connected to XSCF, and perform the input operation according to the instructions of the maintenance menu that is displayed after the replacement.**

   a. **Perform operation according to instructions of messages. When the display of the maintenance menu returns to the initial page, the operation is completed.**

   b. **Exit the maintenance menu.**

10. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement FAN, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

11. **Close the door on the server, and lock it.**

8.3 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

---

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

3. **Stop (turn off power) all domains together. Take either of the following two actions:**
   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.
4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**
5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**
7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Using a Phillips screwdriver, loosen the knob screw of the fixing bracket of the FAN unit to release the bracket. (See** FIGURE 8-11**)**

9. **While grasping the handle of the FAN unit to be replaced, pull it out slowly from the slot.**

10. **Place the removed FAN unit on an antistatic mat.**

11. **Mount the replacement FAN unit by following the removal instructions in Step 8 and Step 9 in reverse order. Align the FAN unit with the slot guides, insert it carefully, and secure it firmly.**

Caution – Do not forcibly push the FAN unit when inserting it, even if it is not moving smoothly. If the FAN unit is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

12. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

13. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

14. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

15. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement FAN, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

16. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

17. **Close the door on the server, and lock it.**

CHAPTER 9

Power Supply Unit (PSU) Replacement

This chapter explains the replacement procedures for the power supply unit (PSU). It covers the following:

- Section 9.1, "Overview of the PSU" on page 9-1
- Section 9.2, "Active Replacement and Hot Replacement" on page 9-8
- Section 9.3, "Cold Replacement" on page 9-12

There are three methods for replacing a PSU: active replacement , hot replacement, and cold replacement. For the definition of each type of method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

The same power supply unit is mounted on the rack-mountable dual power feed option or power cabinet (see Chapter 24). The orientation of the mounted power supply unit may vary by 90 degrees, but the replacement procedure is the same. See the procedure described in subsequent sections.

9.1 Overview of the PSU

This section provides an overview of the PSU and describes its mounting locations.

A PSU receives alternating power, and it distributes 48 V and 12 V of direct current to each component. PSUs have an N+1 redundancy configuration, and active maintenance can be performed on them.

FIGURE 9-1 and FIGURE 9-2 show the PSU locations inside the M8000 server. FIGURE 9-3 and FIGURE 9-4 show the PSU locations inside the M9000 server (base cabinet). FIGURE 9-5 and FIGURE 9-6 show the PSU locations inside the M9000 server (with an expansion cabinet).

For details of the types and locations of power supply, see Section 4.5, “Power-On/Off of Main Line Switch” on page 4-24.

FIGURE 9-1 PSU Mounting Locations (Front of the M8000 + Power Cabinet)

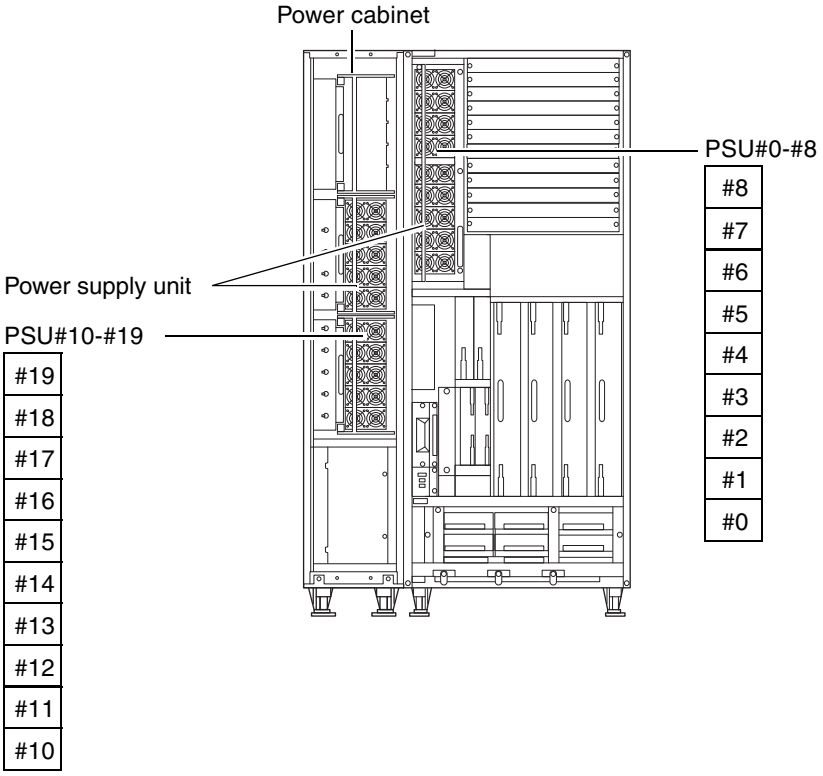


FIGURE 9-2 PSU Mounting Locations (Rear of M8000 + Power Cabinet)

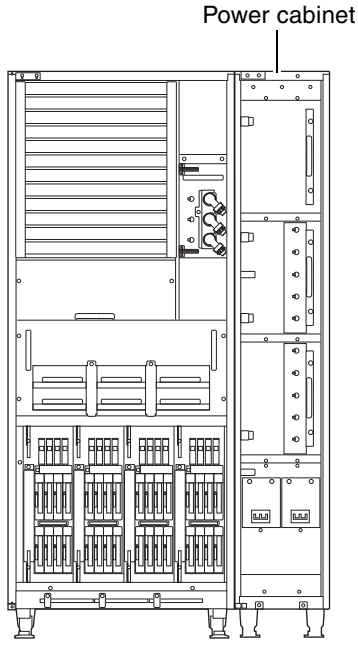


FIGURE 9-3 PSU Mounting Locations (Front of the M9000 Base Cabinet + Power Cabinet)

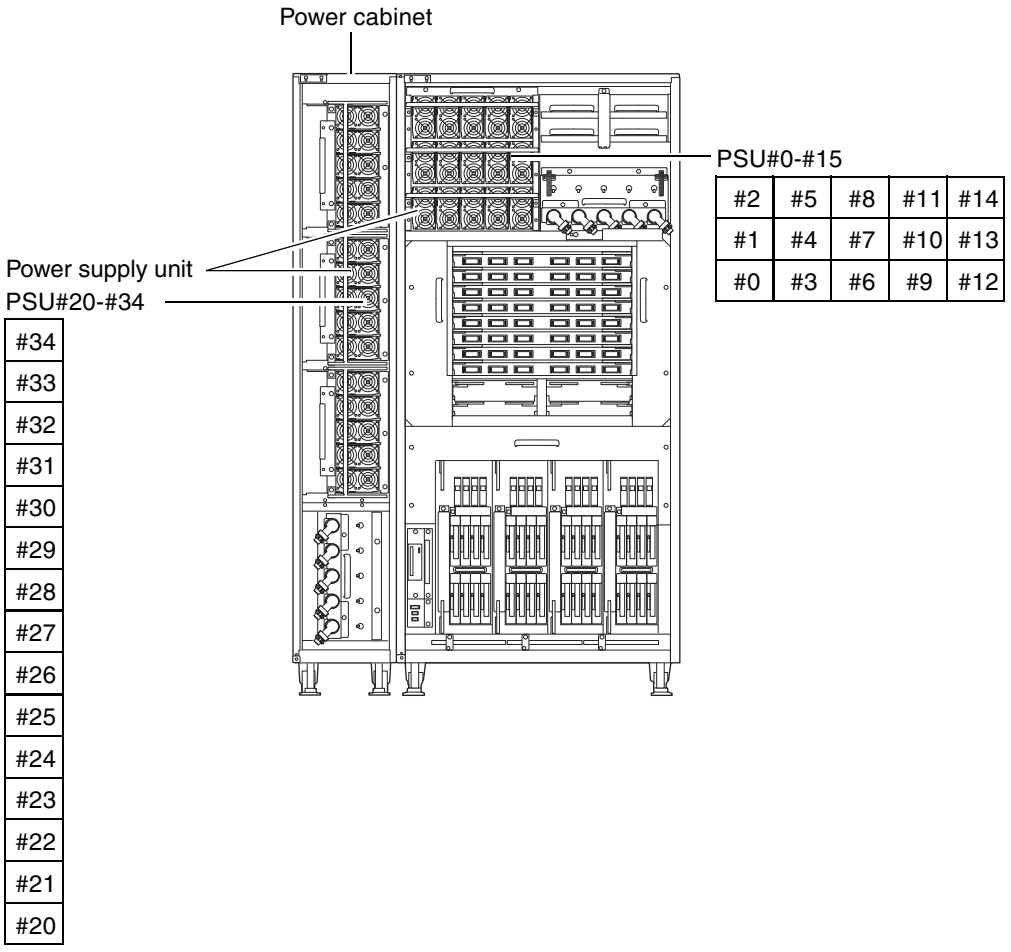


FIGURE 9-4 PSU Mounting Locations (Rear of the M9000 Base Cabinet + Power Cabinet)

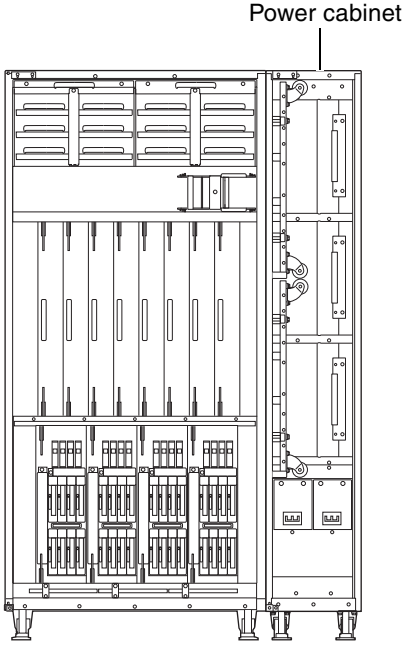


FIGURE 9-5 PSU Mounting Locations (Front of M9000 with an Expansion Cabinet + Power Cabinet)

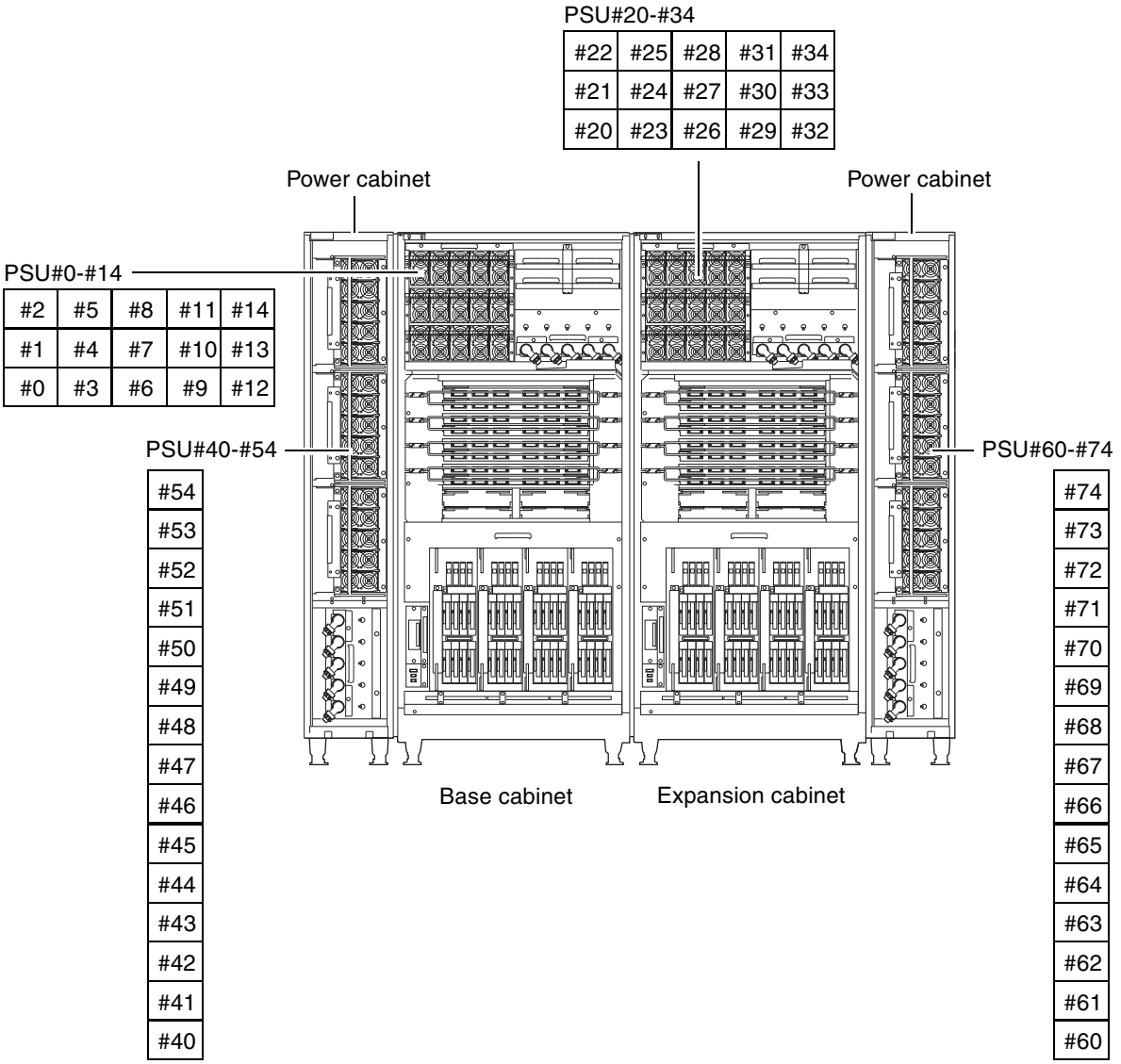


FIGURE 9-6 PSU Mounting Locations (Rear of M9000 with an Expansion Cabinet + Power Cabinet)

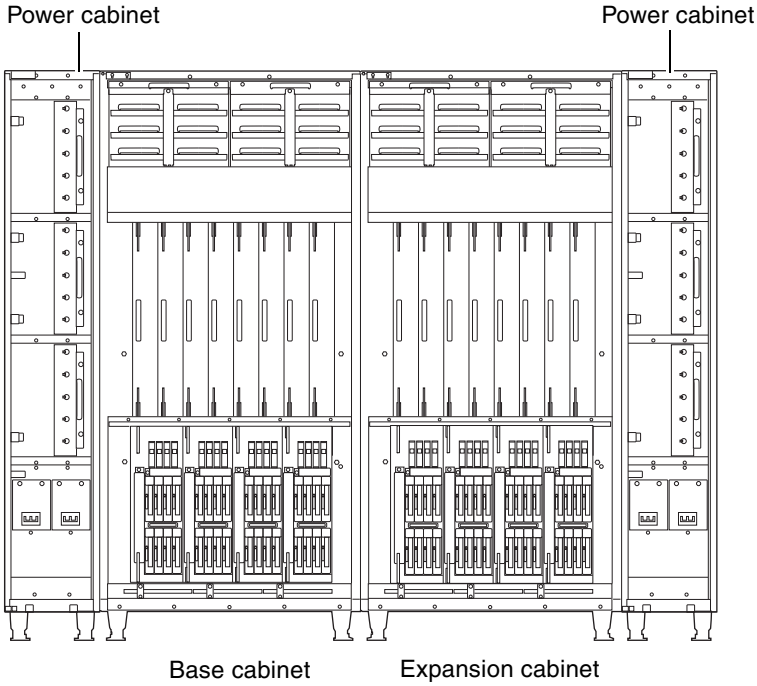


TABLE 9-1 lists the abbreviated names and component numbers of the PSUs.

TABLE 9-1 Abbreviated Names with Component Numbers of PSUs

Model name	Abbreviated names and numbers	
	Single power feed	Dual power feed
M8000	PSU#0 to 8	PSU#10 to 19
M9000 base cabinet	PSU#0 to 14	PSU#20 to 34
M9000 expansion cabinet	PSU#20 to 34	PSU#40 to 74

9.2 Active Replacement and Hot Replacement

Caution – Each cabinet contains multiple PSUs so that the power output specifications are satisfied even if one PSU fails. However, avoid continuing operation for a long period with a faulty PSU left in the cabinet.

The active replacement procedure and hot replacement procedure for the PSUs are the same.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Display the maintenance menu, and select the swap target PSU. (The maintenance menu is used up to Step 9.)**

   The `fieldeng` permission is required for executing this command.

   a. **From the console that is connected to XSCF, log in to XSCF, and execute the `replacefru` command.**

      As shown in FIGURE 9-7, the initial page of the maintenance menu is displayed.

FIGURE 9-7 Initial Page of the Maintenance Menu

```
------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. CMU/IOU(CPU Memory Board Unit/IO Unit)
2. FAN(Fan Unit)
3. PSU(Power Supply Unit)
4. XSCFU(Extended System Control Facility Unit)
5. DDC_A(DDC for BP_A)
------------------------------------------------
Select [1-5|c:cancel] :
```

Note – DDC_A is displayed only for the M8000.

b. From the replacement parts list on the maintenance menu, select 3, "PSU."

c. From here, perform the operation according to the instructions displayed in the maintenance menu.

Check the states of LEDs (POWER LED: off; CHECK LED: blinking) on the PSU to be replaced, and begin the actual replacement work when a message instructing the user to replace the target PSU is displayed. Leave the maintenance menu as is until Step 7.

3. Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See Section 1.4, “Antistatic Precautions” on page 1-6**.**

4. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

5. **Using a Phillips screwdriver, loosen the knob screw of the fixing bracket of the PSU to release the bracket.**
6. **While pushing the lock lever (green) of the PSU to be replaced, raise the handle to about 45 degrees, and pull out the PSU slowly from the slot.**

FIGURE 9-8 Removing the PSU (Front of M8000)

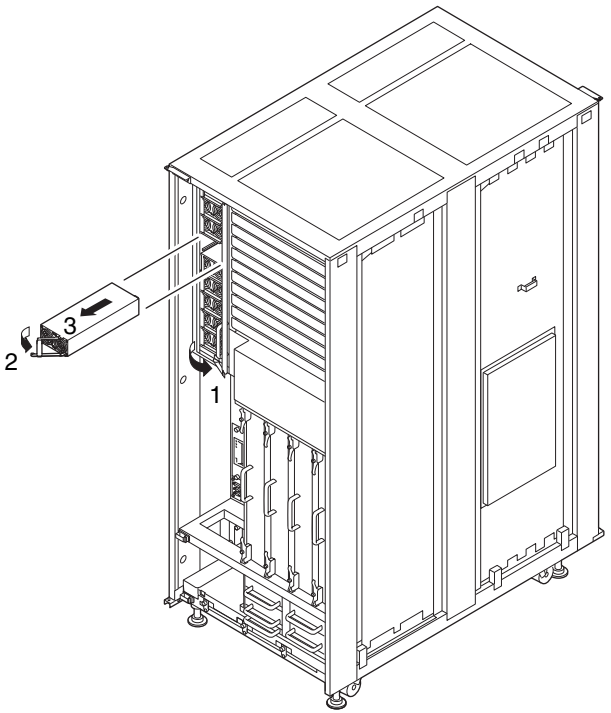
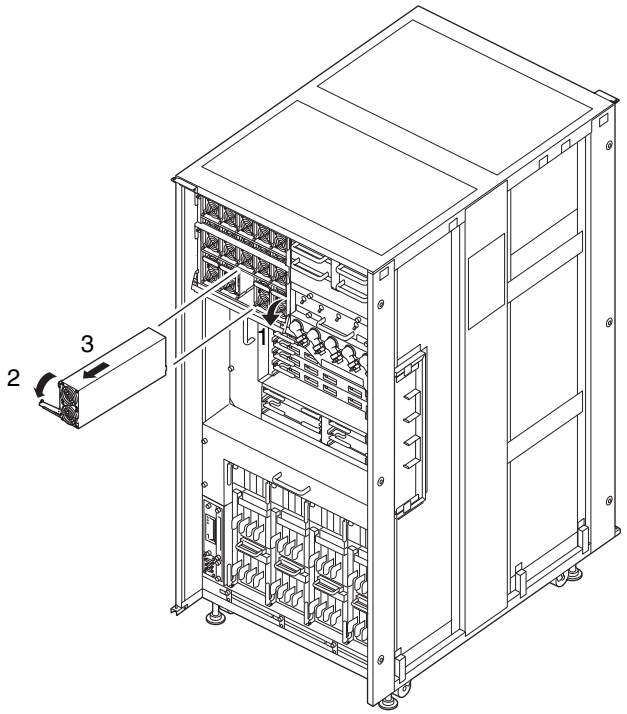


FIGURE 9-9 Removing the PSU (Front of the M9000 Base Cabinet)



7. **Place the removed PSU on an antistatic mat.**

8. **Mount the replacement PSU by following the removal instructions in Step 5 and Step 6 in reverse order. Align the PSU with the slot guides, insert it carefully, and secure it firmly.**

Caution – Each cabinet contains multiple PSUs so that the power output specifications are satisfied even if one PSU fails. However, please refrain from the long time operation as one PSU remains failed.

Caution – Do not forcibly push the PSU when inserting it, even if it is not moving smoothly. If the PSU is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

9. **Go back to the terminal that is connected to XSCF, and perform the input operation according to the instructions on the maintenance menu that is displayed after the replacement.**

a. **Perform operation according to instructions of messages. When the display of the maintenance menu returns to the initial page, the operation is completed.**

b. **Exit the maintenance menu.**

10. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement PSU, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

11. **Close the door on the server, and lock it.**

9.3 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

---

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

- Press and hold the POWER switch on the operator panel for at least four seconds.
- From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**
5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **Using a Phillips screwdriver, loosen the knob screw of the fixing bracket of the PSU to release the bracket, and open it 180 degrees. (See** FIGURE 9-8 **or** FIGURE 9-9**)**
9. **While pushing the lock lever (green) of the PSU to be replaced, raise the handle to about 45 degrees, and pull out the PSU slowly from the slot.**
10. **Place the removed PSU on an antistatic mat.**
11. **Mount the replacement PSU by following the removal instructions in** Step 8 **and** Step 9 **in reverse order. Align the PSU with the slot guides, insert it carefully, and secure it firmly.**

Caution – Do not forcibly push the PSU when inserting it, even if it is not moving smoothly. If the PSU is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

12. **Switch on all main line switches for the AC section (ACS) in the power supply system.**
13. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**
14. **Start (turn on power) all domains together. Take either of the following two actions:**
    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to the XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

15. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement PSU, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

16. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

17. **Close the door on the server, and lock it.**

CHAPTER 10

Operator Panel Replacement

This chapter explains the replacement procedures for the operator panel (OPNL). It covers the following:

- Section 10.1, "Overview of the Operator Panel" on page 10-1
- Section 10.2, "Cold Replacement" on page 10-4

Cold replacement is the only swapping method that can be used for the OPNL. For the definition of each type of swapping method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

Note – Operation on the operator panel requires a different key from the key for the doors of the server. Both are managed by the system administrator.

Note – If you replace the XSCF unit and the operator panel simultaneously, system will not operate normally. Execute the `showhardconf` command or the `showstatus` command to confirm that the component replaced earlier is operating normally, before replacing the subsequent FRU.

10.1 Overview of the Operator Panel

This section provides an overview of the OPNL and describes its mounting location.

The OPNL is used for the operation and condition display of the server. Active maintenance is not supported. The OPNL is mounted on the front cover.

FIGURE 10-1 OPNL Mounting Location (Front of the M8000)

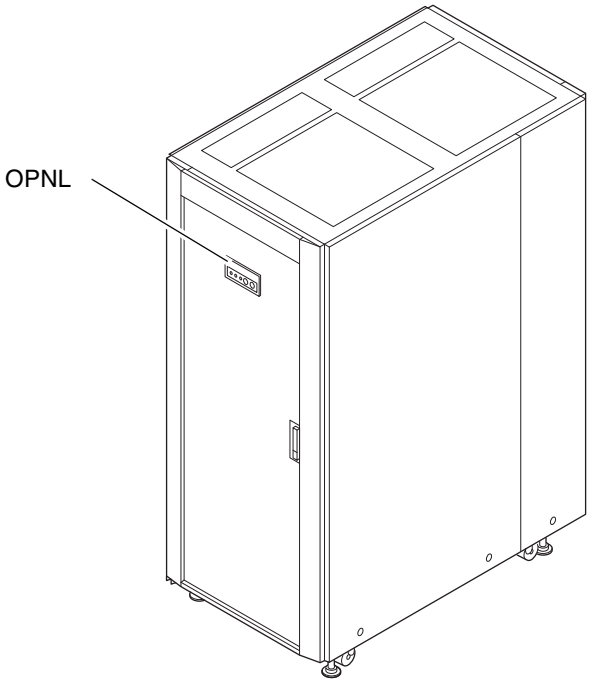


FIGURE 10-2 OPNL Mounting Location (Front of the M9000 Base Cabinet)

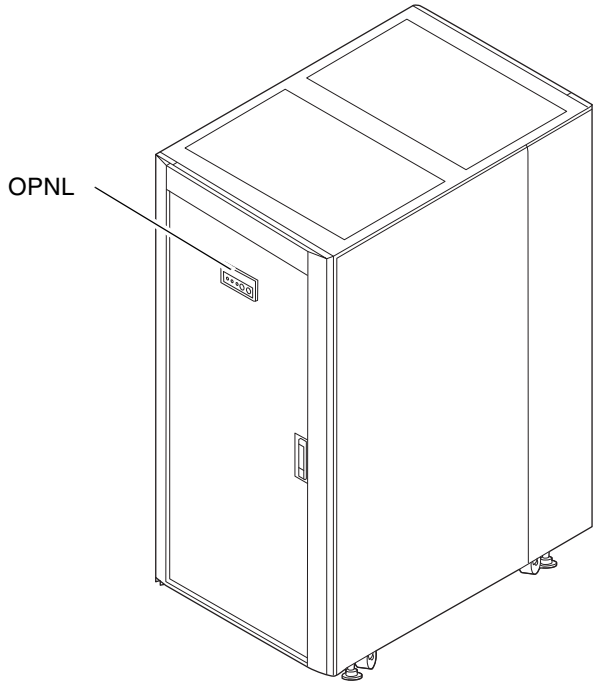


FIGURE 10-3 OPNL Mounting Location (Front of M9000 with the Expansion Cabinet)

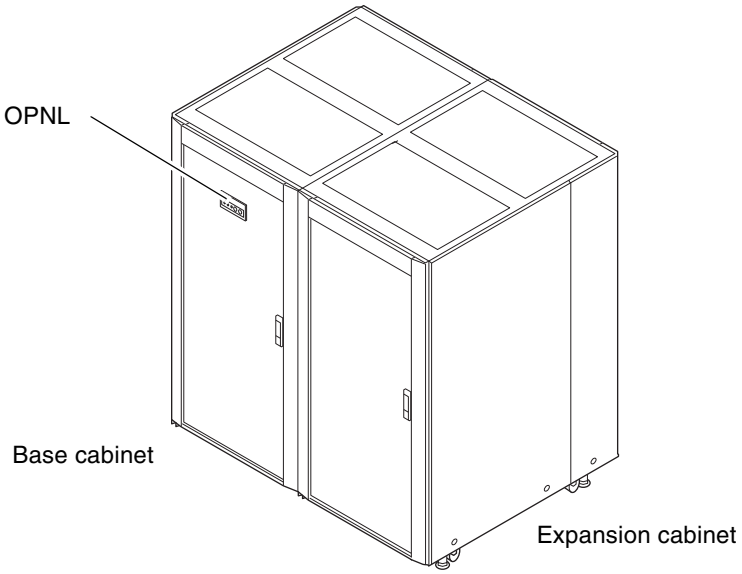


TABLE 10-1 lists the abbreviated name of the OPNL.

TABLE 10-1 Abbreviated Name of the Operator Panel

Model name	Abbreviated name
M8000/M9000 Operator Panel	OPNL

10.2 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the OPNL from the Locked position to the Service position.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**
   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.
4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**
5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

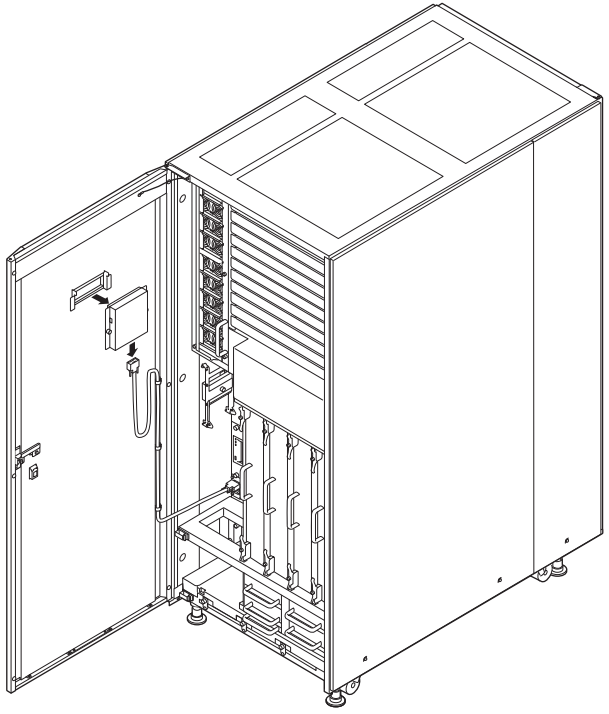
8. **Change the mode switch setting on the OPNL to the Locked position and pull out the key.**

   The key cannot be pulled out at the Service position.

9. **Remove the cable from the connector of the OPNL.**

10. **Using a Phillips screwdriver, loosen the two knob screws securing the OPNL, and remove the OPNL from the front cover.**

FIGURE 10-4 Removing the OPNL



11. **Place the removed OPNL on an antistatic mat.**

12. **Mount the replacement OPNL by following the removal instructions in Step 8 to Step 10 in reverse order.**

Caution – Do not forcibly push the cable in when inserting it. If there is problem with the connector pin, serious damage may result.

13. **Insert the OPNL key, and then set the key to the Service position.**

14. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

15. **Confirm that the XSCF STANDBY LED (green) on the OPNL remains lit. If it is blinking, wait until it remains lit.**

16. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

17. **Confirm that the replaced components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement OPNL, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

18. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

19. **Close the door on the server, and lock it.**

CHAPTER 11

XSCF Unit Replacement

This chapter explains the replacement procedures for an eXtended System Control Facility unit (XSCFU). It covers the following:

- Section 11.1, "Overview of the XSCFU" on page 11-1
- Section 11.2, "Active Replacement and Hot Replacement" on page 11-5
- Section 11.3, "Cold Replacement" on page 11-12

There are three methods for replacing an XSCFU: active replacement, hot replacement, and cold replacement. For the definition of each type of method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

Note – If you replace the XSCF unit and the operator panel simultaneously, system will not operate normally. Execute the `showhardconf` command or the `showstatus` command to confirm that the component replaced earlier is operating normally, before replacing the subsequent FRU.

11.1 Overview of the XSCFU

This section provides an overview of the XSCFU and describes their mounting locations.

The XSCFU controls and manages the server hardware. There are two types of XSCFU: the XSCFU_B, which is used for both high-end servers, and the XSCFU_C, which is used for the expansion cabinet of the M9000. The XSCFU is duplicated, and active maintenance can be performed on it.

FIGURE 11-1, FIGURE 11-2, and FIGURE 11-3 show the mounting locations of XSCFUs.

FIGURE 11-1 XSCFU Mounting Locations (Front of the M8000)

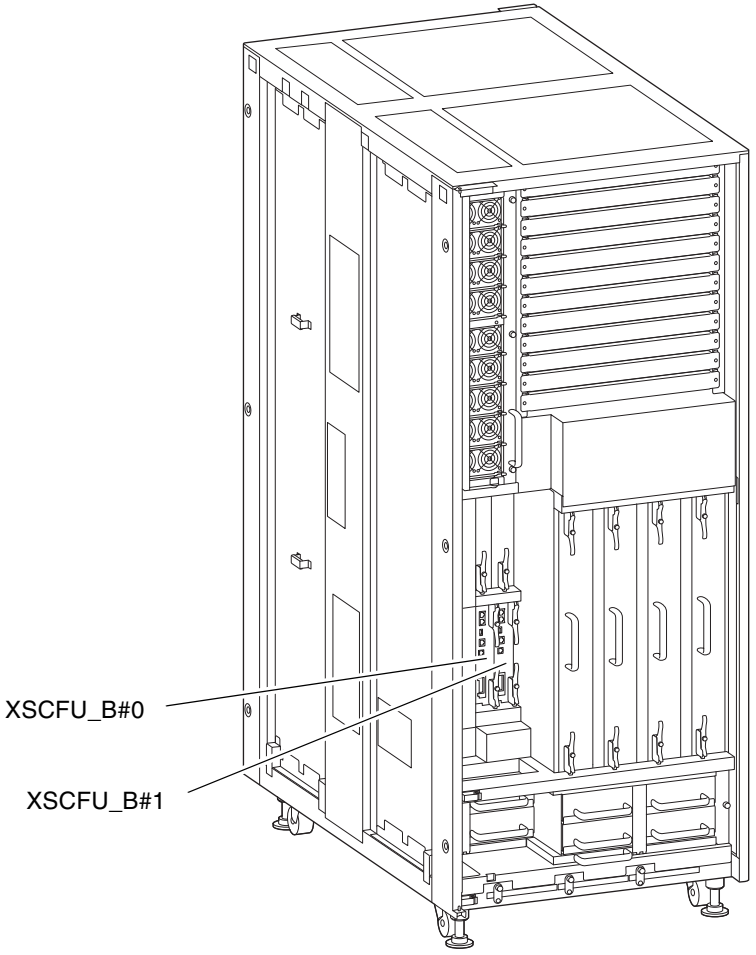


FIGURE 11-2 XSCFU Mounting Locations (Front of the M9000 Base Cabinet)

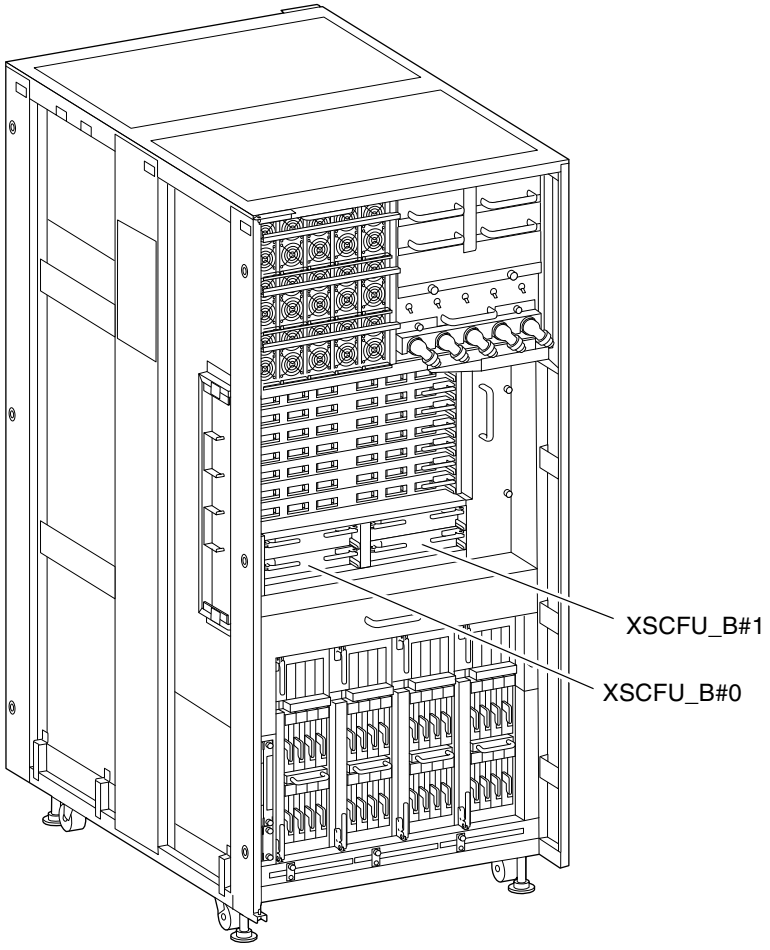


FIGURE 11-3 XSCFU Mounting Locations (Front of M9000 with the Expansion Cabinet)

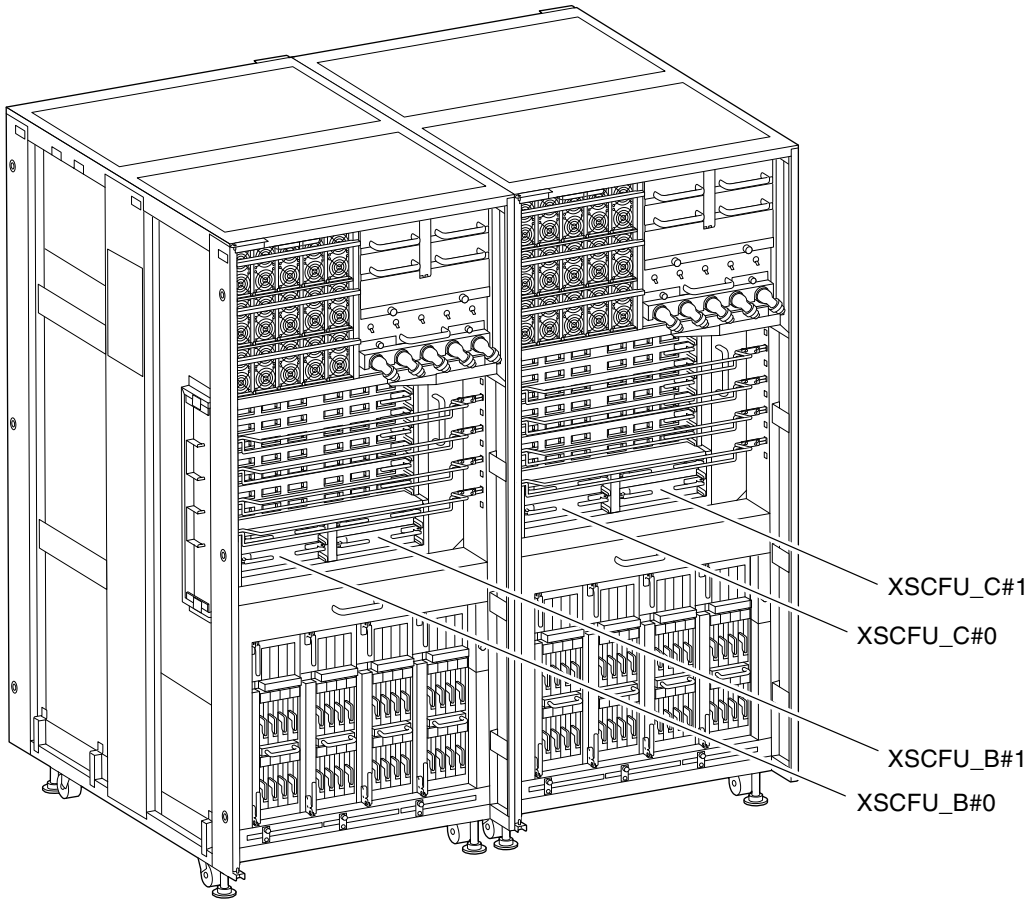


TABLE 11-1 lists the abbreviated names and component numbers of the XSCFUs.

TABLE 11-1 Abbreviated Names and Component Numbers of XSCFUs

Model name	Abbreviated names and numbers
M8000	XSCFU_B#0, 1
M9000 base cabinet	XSCFU_B#0, 1
M9000 expansion cabinet	XSCFU_C#0, 1

11.2 Active Replacement and Hot Replacement

Note – To replace the XSCF Unit, you must consider the version of the XCP that is currently in the server.

To determine the firmware version of the server, type:

```
XSCF> version -c xcp
```

For more information, refer to the `version` (8) man page or the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*.

If the version of XCP in your server is XCP 1041 or earlier, see Appendix E. If the server has XCP1050 or later, follow the procedure described below.

The active replacement procedure and hot replacement procedure for the XSCFU are the same.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, “Antistatic Precautions” on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **When the Active LED (green) of the XSCFU to be replaced is lit, log in to the XSCF from a terminal connected to the XSCF, and then execute the `switchscf` command for switching to Standby.**

```
XSCF> switchscf -t Standby
```

3. **Use the maintenance menu to select the XSCFU to be replaced. (The maintenance menu is used up to Step 10.)**

   The fieldeng permission is required for executing this command.

   a. **From the console that is connected to the Active XSCF, log in to the XSCF, and execute the `replacefru` command.**

      As shown in FIGURE 11-4, the initial page of the maintenance menu is displayed.

FIGURE 11-4 Initial Page of the Maintenance Menu

```
------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. CMU/IOU(CPU Memory Board Unit/IO Unit)
2. FAN(Fan Unit)
3. PSU(Power Supply Unit)
4. XSCFU(Extended System Control Facility Unit)
5. DDC_A(DDC for BP_A)
------------------------------------------------
Select [1-5|c:cancel] :
```

Note – DDC_A is displayed only for the M8000

   b. **From the replacement parts list on the maintenance menu, select 4, "XSCFU."**

   c. **From here, perform the operation according to the guidance displayed in the maintenance menu.**

      Check the states of LEDs (POWER LED: off; CHECK LED: blinking) on the XSCFU to be replaced, and begin the actual replacement work when a message instructing the user to replace the target XSCFU is displayed. Leave the maintenance menu as is until Step 6.

4. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See Section 1.4, "Antistatic Precautions" on page 1-6.**

5. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

6. **For the M9000 (with the expansion cabinet), disconnect the cables from all connectors of the XSCFU to be replaced.**
7. **Remove the XSCFU to be replaced.**
   a. **If the SPARC Enterprise M9000 server expansion cabinet is installed, slide the cable support bracket at the front of the XSCF unit up or down by one hole, and then remove the cable connected to the XSCF unit.**
   b. **Using a Phillips screwdriver, turn the knob screws securing the upper and lower eject/lock levers (in the SPARC Enterprise M8000 server) or left and right eject/lock levers (in the SPARC Enterprise M9000 server) 90 to 180 degrees to unlock the levers. (Turn the knob screw while lightly pulling the lever.)**
   c. **Unlock the eject/lock levers to pull the XSCFU off the backplane.**
   d. **While grasping the eject/lock levers, pull out the XSCFU slowly from the slot.**

FIGURE 11-5 Removing the XSCFU (Front of the M8000)

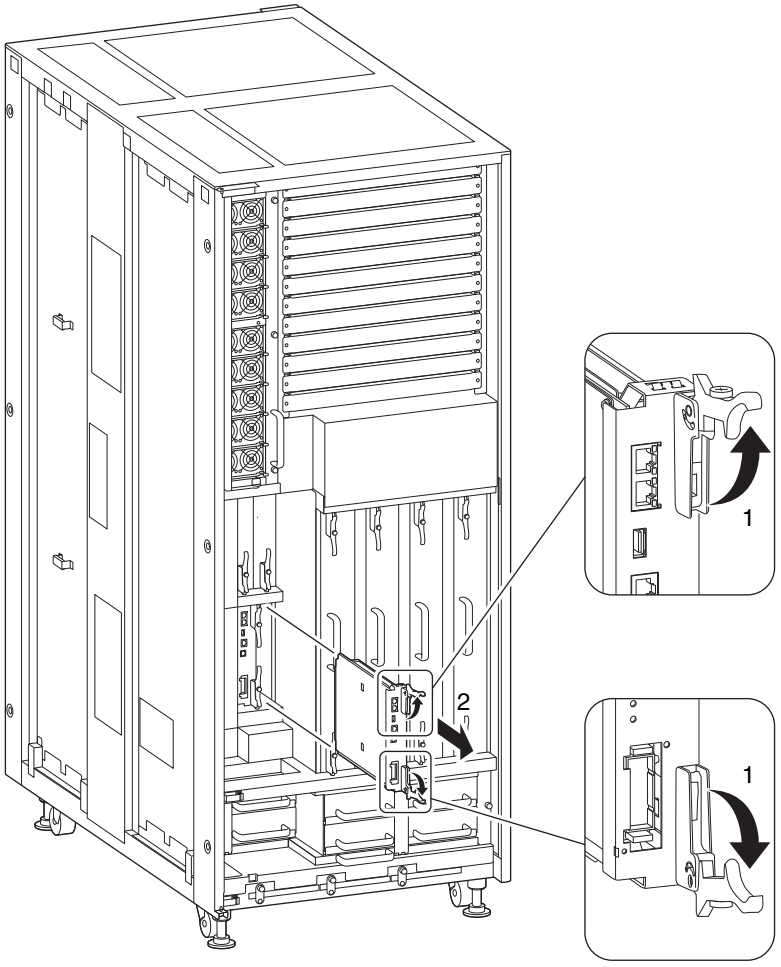
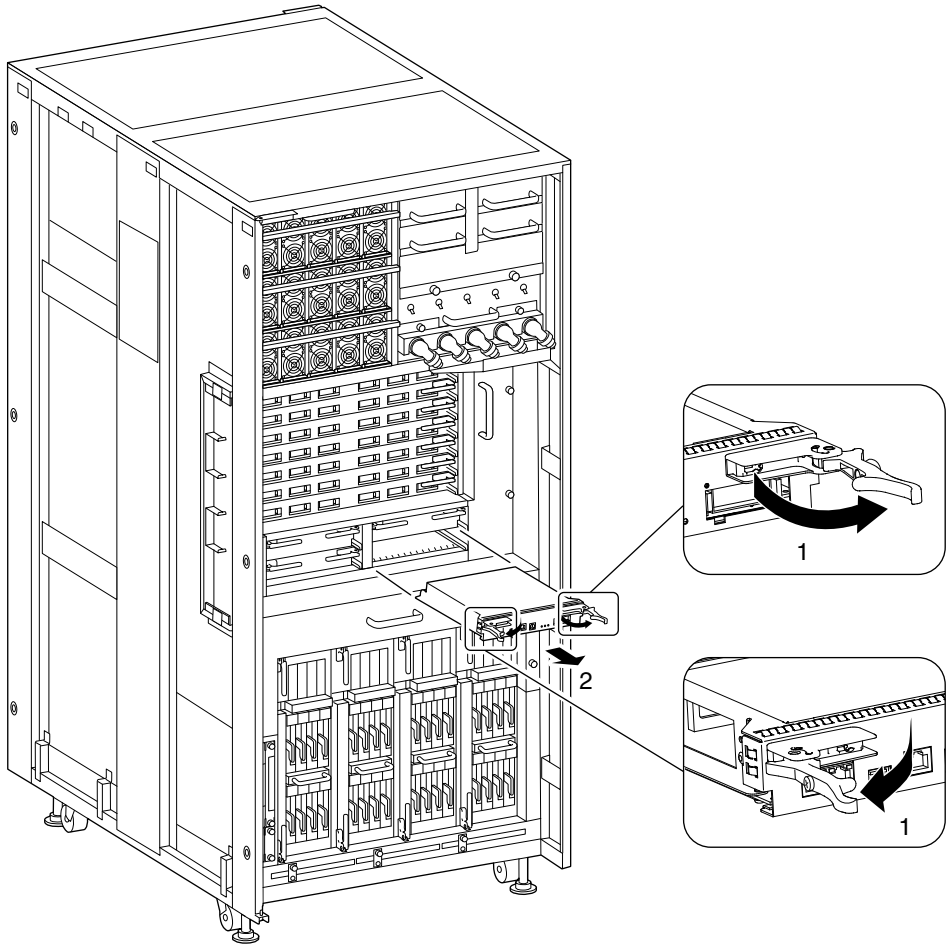


FIGURE 11-6 Removing the XSCFU (Front of the M9000 Base Cabinet)



8. **Place the removed XSCFU on an antistatic mat.**

9. **Mount the replacement XSCFU by following the removal instructions in** Step 6 **and** Step 7 **in reverse order. Align the XSCFU with the slot guides, insert it carefully, and secure it firmly.**

   Push the levers as far as they will go, and then push the knob screws on the eject/lock levers to lock them in position. When the knob screws remain in position, the XSCF unit is securely mounted.

Note – When your system is the SPARC Enterprise M9000 server with Expansion Cabinet, pay attention to the XSCF message or the error log information which pointing out the suspect unit.
* When it is "XSCFU_C," replace XSCFU_C.
* When it is "XSCFU_B," you must always once extract both XSCFU_B and XSCFU_C.
For insertion, insert XSCFU_C first, and then XSCFU_B.

Caution – Do not forcibly push the XSCFU in when inserting it. If the XSCFU is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

Caution – Do not forcibly push the cable connector when inserting it. If the cable connector is forcibly inserted, the cable connector might be damaged.

10. **Go back to the terminal that is connected to XSCF, and perform the input operation according to the guidance of the maintenance menu that is displayed after the replacement.**

    a. **Perform operation according to instructions of messages. When the display of the maintenance menu returns to the initial page, the operation is completed.**

    b. **Exit the maintenance menu.**

(In case communication with XSCF is lost)

During execution of the maintenance command (such as the `replacefru` command) in the active XSCF unit, in case communication with XSCF is lost for some reason such as LAN disconnection, re-execute the command in the manner described below:

i. **Reconnect to XSCF.**

In case multiple maintenance commands executed, the XSCF becomes locked status and the message as follows appears.

```
Unable to perform maintenance commands at this time.
Another user is currently executing a maintenance command.
```

When the above message displayed, execute the `unlockmaintenance` command to forcibly release the XSCF locked status.

```
XSCF> unlockmaintenance
```

For details of the `unlockmaintenance` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

ii. **Execute the `showhardconf` command.**

And, confirm that the currently active XSCF unit is the one, which you are going to replace with using `replacefru` command.

iii. **After confirming that the system did not switch the other XSCF unit as active, re-execute the `replacefru` command.**

(a)When you can execute the `replacefru` command

Follow the `replacefru` command to replace the unit.

(b)In case communication with XSCF is lost after you physically replaced the target XSCF

The new XSCF unit is physically mounted; however, the mounting process is not yet finished completely. When the `replacefru` command showed a message which prompts the replacement of XSCF unit, once extract the inserted XSCF unit which has undergone the replacement, and then reinsert it.

Note – If an attempt to re-execute the `replacefru` command from the active XSCF fails, or if an XSCF failover occurred and the XSCF units switched, both XSCF units will require cold replacement. For information on cold replacement, see Section 11.3, "Cold Replacement" on page 11-12.

---

11. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

Unless "*" is displayed for the replacement XSCFU, it is operating normally.

For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

12. **Confirm that the version of the replaced XSCF unit is the same. If the version number is different, upgrade the firmware again to match up the version numbers.**

For the version matching of firmware, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

13. **Close the door on the server, and lock it.**

11.3 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold down the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **For the M9000 (with the expansion cabinet), disconnect the cables from the connectors of the XSCFU to be replaced. Disconnect any other cables, such as a LAN cable, as necessary.**

9. **Remove the XSCFU to be replaced. (See** FIGURE 11-5 **or** FIGURE 11-6**)**

   a. **Using a Phillips screwdriver, turn the knob screws securing the upper and lower eject/lock levers (in the SPARC Enterprise M8000 server) or left and right eject/lock levers (in the SPARC Enterprise M9000 server) 90 to 180 degrees to unlock the levers. (Turn the knob screw while lightly pulling the lever by one hand.)**

   b. **Unlock the eject/lock levers to pull the XSCFU off the backplane.**

   c. **While grasping the eject/lock levers, pull out the XSCFU slowly from the slot.**

10. **Place the removed XSCFU on an antistatic mat.**

11. **Mount the replacement XSCFU by following the removal instructions in Step 8 and Step 9 in reverse order. Align the XSCFU with the slot guides, insert it carefully, and secure it firmly.**

    Push the levers as far as they will go, and then push the knob screws on the eject/lock levers to lock them in position. When the knob screws remain in position, the XSCF unit is securely mounted.

Caution – Do not forcibly push the XSCFU in when inserting it. If the XSCFU is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

Caution – Do not forcibly push the cable in when inserting it. If the cable is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

12. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

13. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

14. **Update the XSCF firmware.**

    In case the version of the firmware on the replaced XSCFU is different from the version of the original, it is necessary to match the version of the firmware.

    For the version matching of firmware, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

15. **Set the XSCF clock.**

    From the terminal connected to XSCF, log in to XSCF and use `setdate -s` *MMDDhhmmCCYY.ss* command to set the current time.

    For details of the `setdate` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

16. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

17. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement XSCFU, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

18. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

19. **Close the door on the server, and lock it.**

CHAPTER 12

Hard Disk Drive (HDD) Replacement

This chapter explains the replacement procedures for the hard disk drive (HDD). It covers the following:

- Section 12.1, "Overview of the HDD" on page 12-1
- Section 12.2, "Active Replacement" on page 12-3
- Section 12.3, "Cold Replacement" on page 12-5

There are two methods for replacing a HDD: active replacement and cold replacement. For the definition of each type of method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

12.1 Overview of the HDD

This section provides an overview of the HDD and shows its mounting locations.

HDDs are mounted in the four HDD slots in an IOU to expand the storage capacity of the system. In each HDD slot, a 2.5-inch SAS interface HDD can be mounted. A filler panel may be mounted in an HDD slot. Active maintenance can be performed on an HDD.

FIGURE 12-1 indicates the HDD mounting locations in an IOU cabinet. For information on the IOU mounting locations, see FIGURE 7-1 to FIGURE 7-5 in Chapter 7.

FIGURE 12-1 HDD Mounting Locations

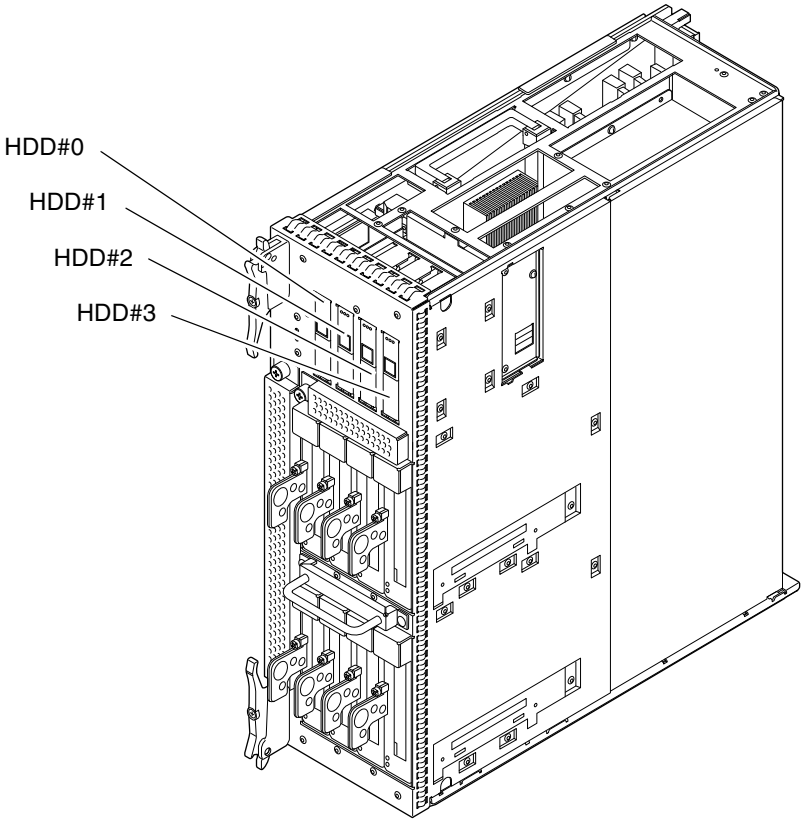


TABLE 12-1 lists the abbreviated name and numbers of HDDs in an IOU.

TABLE 12-1 Abbreviated Name and Numbers of Hard Disk Drives

Component name	Abbreviated name and number
Hard disk drive	HDD#0 to 3

12.2 Active Replacement

The procedure for active replacement is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Prepare for the replacement of the target HDD.**

   From the OS, execute the `cfgadm -a` command to verify Ap_Id.

   Stop the use of HDD by the application and disconnect the HDD from the OS. The procedure of disconnecting the HDD from the OS varies depending on if you are using the disk mirroring software or other supporting software. When you are not using such kind of software, you can use the `cfgadm` command to disconnect the target from the OS. When you are using the above software, see the manual of that software for how to disconnect the disk.

   The READY LED (green) of the HDD is turned off.

3. **Blink the CHECK LED of the HDD to be replaced.**

   From the OS, execute the `cfgadm -x led=fault,mode=blink` <*Ap_Id*> command.

4. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

5. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

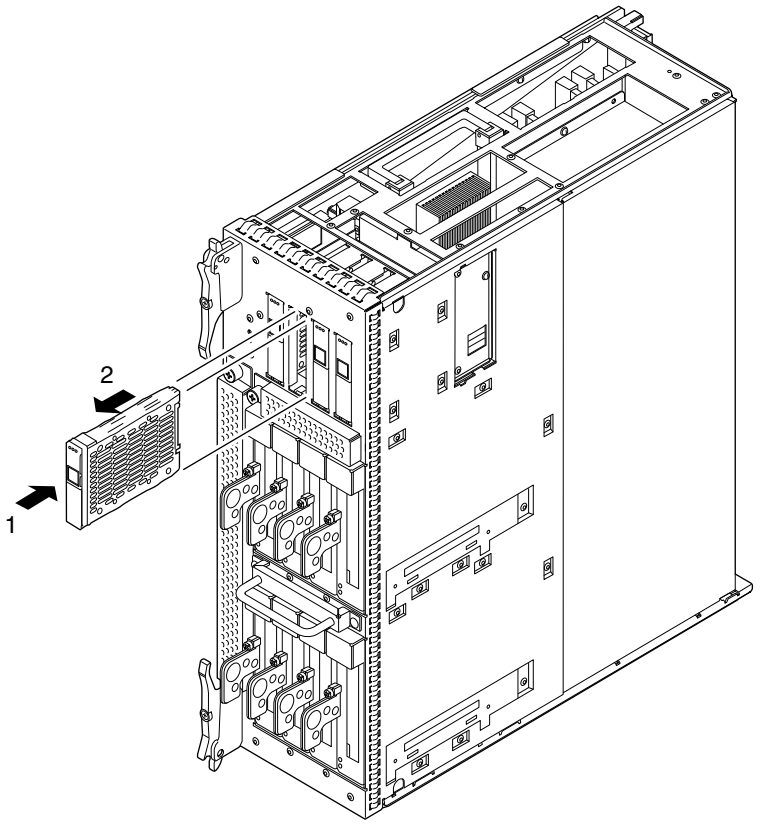
6. **Remove the HDD unit to be replaced.**

   a. **Press the square push button on the HDD unit to be replaced.**
      The eject/lock lever protrudes at an angle of about 45 degrees.

   b. **Pull the eject/lock lever to an angle of about 90 degrees to release the lock.**

   c. **While grasping the eject/lock lever, pull out the HDD unit slowly from the slot.**

FIGURE 12-2 Removing the HDD



7. **Place the removed HDD on an antistatic mat.**

8. **Mount the replacement HDD by following the removal instructions in Step 6 in reverse order. Align the HDD with the slot guides, insert it carefully, and secure it firmly.**

Caution – Do not forcibly push the HDD when inserting it, even if it is not moving smoothly. If the HDD is forcibly inserted despite the presence of any problem with a connector pin, serious damage may result.
Do not insert an HDD into a slot while the eject/lock lever is closed. If an HDD is inserted in this condition, it is stopped halfway and becomes difficult to pull out.

9. **Configure the HDD into the system.**

   From the OS, execute the `cfgadm -x led=fault,mode=off` <*Ap_Id*> command to turn off the CHECK LED.

10. **Configure the HDD into the OS.**

    The procedure of configuring the HDD into the OS varies depending on whether or not using the disk mirroring software or other supporting software. When you are not using such kind of software, you can use the `cfgadm` command to configure the target into the OS. After configured, conduct the necessary operation such as format, as required. When you are using the above software, see the manual of that software for how to configure the disk.

    The READY LED (green) of the HDD is turned on.

11. **Close the door on the server, and lock it.**

12.3 Cold Replacement

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

3. **Stop (turn off power) all domains together. Take either of the following two actions:**
   - Press and hold down the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.
4. **Confirm that shutdown processing is completed by confirming that the READY LED (green) on the HDD is off.**
5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**
7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Remove the HDD unit to be replaced. (See FIGURE 12-2)**

   a. **Press the square push button on the HDD unit to be replaced.**

      The eject/lock lever protrudes at an angle of about 45 degrees.

   b. **Pull the eject/lock lever to an angle of about 90 degrees to release the lock.**

   c. **While grasping the eject/lock lever, pull out the HDD unit slowly from the slot.**

9. **Place the removed HDD on an antistatic mat.**

10. **Mount the replacement HDD by following the removal instructions in Step 8 in reverse order. Align the HDD with the slot guides, insert it carefully, and secure it firmly.**

Caution – Do not forcibly push the HDD when inserting it, even if it is not moving smoothly. If the HDD is forcibly inserted despite the presence of any problem with a connector pin, serious damage may result.
Do not insert an HDD into a slot while the eject/lock lever is closed. If an HDD is inserted in this condition, it is stopped halfway and becomes difficult to pull out.

11. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

12. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

13. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

14. **Start the domain as necessary.**

15. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

16. **Close the door on the server, and lock it.**

CHAPTER 13

PCI Slot Device Replacement

This chapter explains the replacement procedures for devices that are mounted in the PCI slots of an IOU. It covers the following:

- Section 13.1, “Overview of PCI Slot Devices” on page 13-1
- Section 13.2, “Active Replacement” on page 13-3
- Section 13.3, “Hot Replacement” on page 13-17
- Section 13.4, “Cold Replacement” on page 13-20

There are three methods for replacing PCI slot devices: active replacement, hot replacement and cold replacement. For the definition of each type of method, see Chapter 4

13.1 Overview of PCI Slot Devices

This section provides an overview of devices that are inserted in the PCI slots of an IOU, and describes their mounting locations.

Each IOU has eight PCI slots. Every PCI slot is equipped with a PCI cassette (PCICS). Any of the devices below can be mounted in a PCI cassette, and the system functions can be expanded with these devices.

- PCI card

  The cards that can be mounted are PCI-Express short cards.
  The PHP function enables active maintenance of PCI cards.

- IOU onboard device card (IOUA)

  A card required for mounting a built in CD-RW/DVD-RW drive unit or tape drive unit
  The PHP function does not enable active maintenance of IOUAs. Perform either hot maintenance or cold maintenance.

- Link card

  If PCI cards mounted in all the IOUs are not sufficient in number, this card serves as a card for connecting an external I/O expansion unit that is used for mounting additional PCI cards.

  The PHP function enables active maintenance of link cards.

A filler panel may be mounted in a PCICS.

FIGURE 13-1 indicates the PCI slot locations in an IOU cabinet. For information on the IOU mounting locations, see FIGURE 7-1 to FIGURE 7-5 in Chapter 7.

FIGURE 13-1 PCI Slot Locations

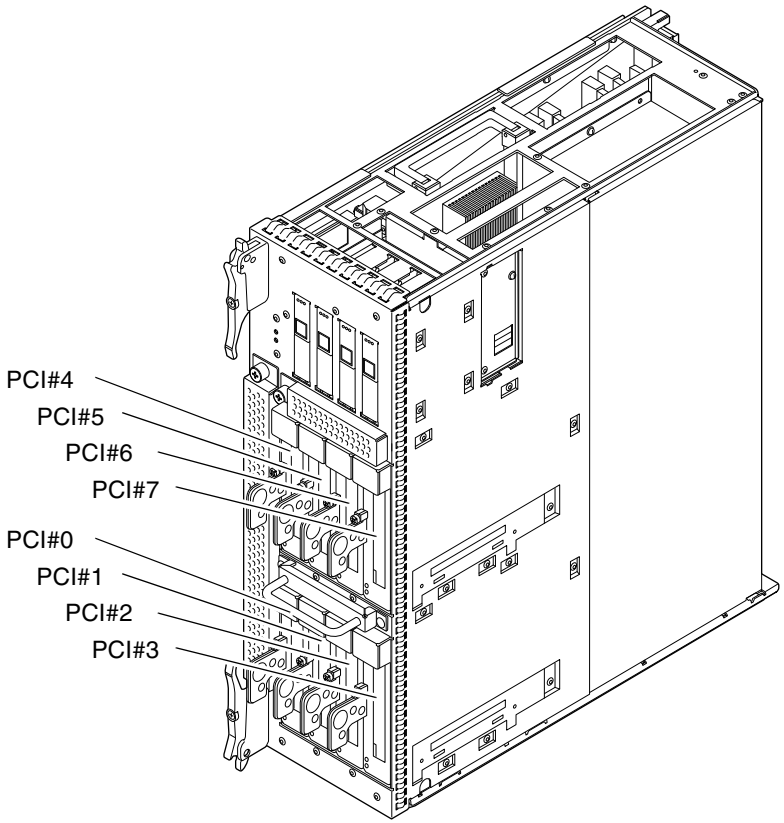


TABLE 13-1 shows abbreviated name and numbers of PCI slots in an IOU.

TABLE 13-1 Abbreviated Name and Numbers of PCI Slots

Slot name	Abbreviated name and numbers
PCI slot	PCI#0 to 7

For the following devices, replacement procedures have the same steps except that LEDs to be checked, eject levers, and names used for status display are different.

- PCI cassette (PCICS)
- PCI card
- IOU onboard device card (IOUA)
- Link card

Note – The steps of the replacement procedures for I/O boxes and link cards mounted in external I/O expansion units, PCI cards, I/O boards, and power supply units are basically the same as those described in this manual. For details, see the *External I/O Expansion Unit Installation and Service Manual*.

The following explains the replacement procedure for a PCI card, which is a typical example.

13.2 Active Replacement

The PHP function enables active replacement of PCI cassettes (PCICSs) and link card. Active replacement cannot be performed for IOU onboard device cards (IOUAs).

The active replacement procedure is as follows.

1. **Unlock and open the appropriate door on the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **From the OS, execute the `cfgadm -a` command to verify the Ap_Id of the PCI card.**

   Example: If the PCI card in PCI slot 3 of IOU#0 is replaced

```
# cfgadm -a
Ap_Id           Type    Receptacle  Occupant    Condition
                                :
iou#0_pci#3    pci_pci/hp  connected  configured  ok
```

   The AP_Id (`iou#0_pci#3`) verified here is referred to as PCI_ApId, and the subsequent explanations of cfgadm operations for the PCI card use the term PCI_ApId.

3. **From the OS, execute the `cfgadm -c unconfigure` <*PCI_ApId*> command to unconfigure the replacement target PCI card from the driver.**

```
# cfgadm -c unconfigure iou#0_pci#3
```

4. **From the OS, execute the `cfgadm -c disconnect` <*PCI_ApId*> command to stop supplying power to the replacement target PCI card.**

```
# cfgadm -c disconnect iou#0_pci#3
```

5. **From the OS, execute the `cfgadm -a` command to confirm that the status of the PCI card has changed from "configured" to "unconfigured," and from "connected" to "disconnected."**

```
# cfgadm -a
Ap_Id           Type    Receptacle Occupant Condition
                     :
iou#0_PCI#3    unknown  disconnected  unconfigured  unknown
```

6. **Blink the ATTENTION LED (amber) of the PCI card to be replaced.**

```
# cfgadm -x led=attn, mode=blink iou#0_pci#3
```

7. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

8. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

9. **Remove the PCI cassette of the PCI card to be replaced.**

Caution – To disconnect the link cable, which is a cable connected between the link card mounted on the server and external I/O expansion unit, pull the latch lock of the connector. If you forcibly pull the connector or the cable, the cable may be damaged.

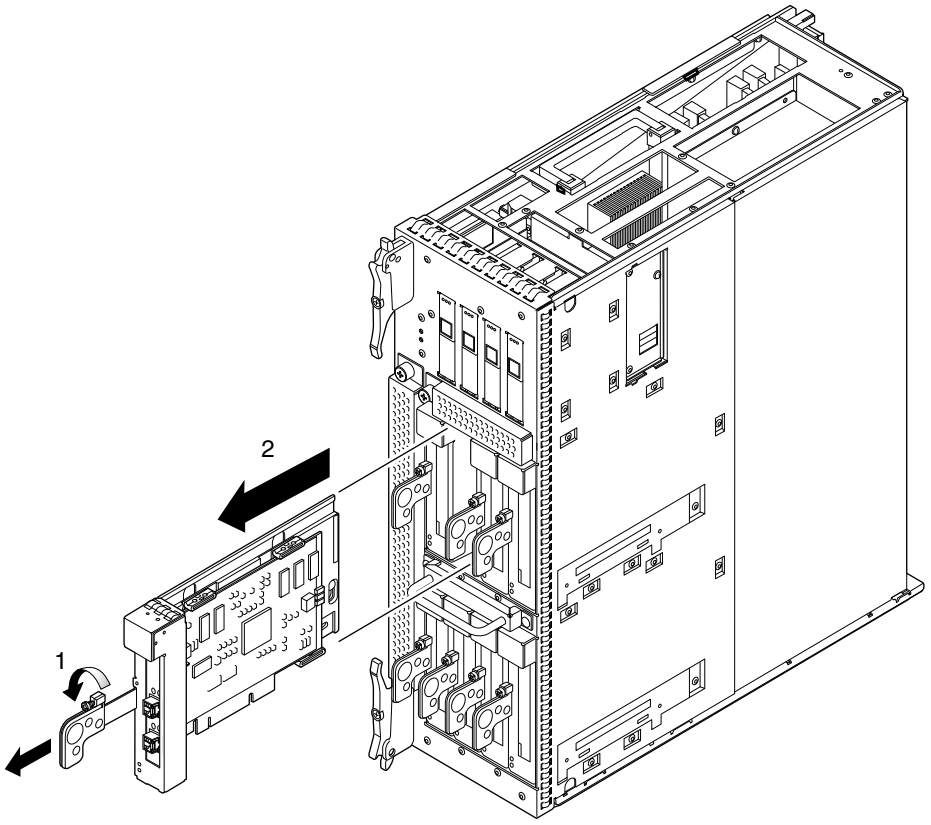
Caution – When removing cables such as LAN cable, if your finger can't reach the latch lock of the connector, press the latch with a flathead screwdriver to remove the cable. Forcing your finger into the clearance can cause damage to the PCI card.

a. **Using a Phillips screwdriver, loosen the green screw securing the lever.**

b. **While grasping the upper part of the PCI cassette, pull the lever until it is stopped, and continue pulling it to pull out the PCI cassette.**

c. **Place the removed PCI cassette on an antistatic mat.**

FIGURE 13-2 Removing the PCI Cassette



10. **Remove the PCI card from the PCI cassette. (Perform this work on the conductive mat.)**

    a. **While grasping the lock bracket, turn it in the direction of the arrow and push the lever a little. Then, push in the lever completely. (See** FIGURE 13-3**)**

    Once you start moving the lever, you need not continue holding the lock bracket.

    b. **Loosen the two screws on the back of the PCI cassette, slide out the latch, and temporarily secure it with screws. (See** FIGURE 13-4**)**

Caution – Do not loosen the screws at the bottom because they are used as a reference position.

    c. **Slide the PCI card in the direction of the arrow to remove it. (See** FIGURE 13-5**)**

FIGURE 13-3 Pushing In the Lever

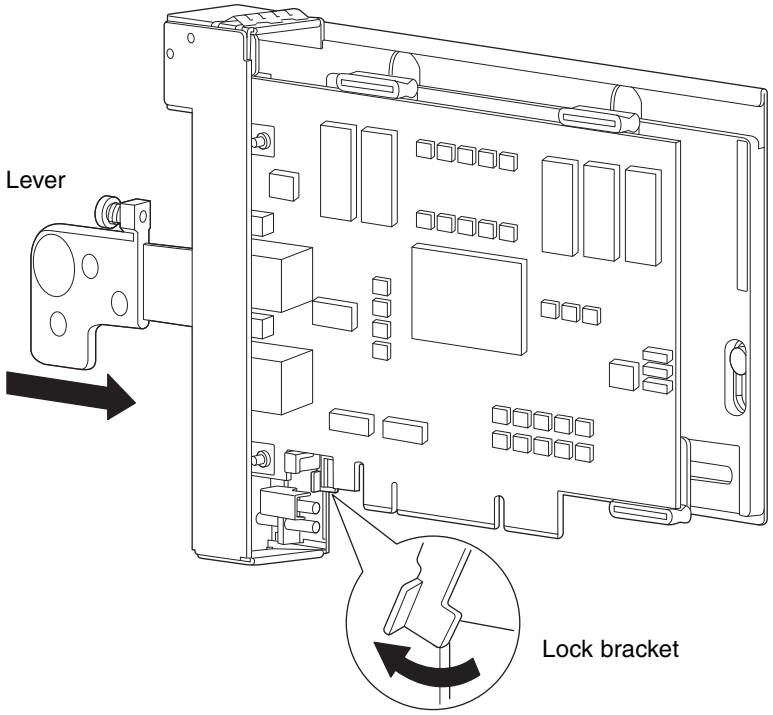


FIGURE 13-4 Loosening Screws of Latches

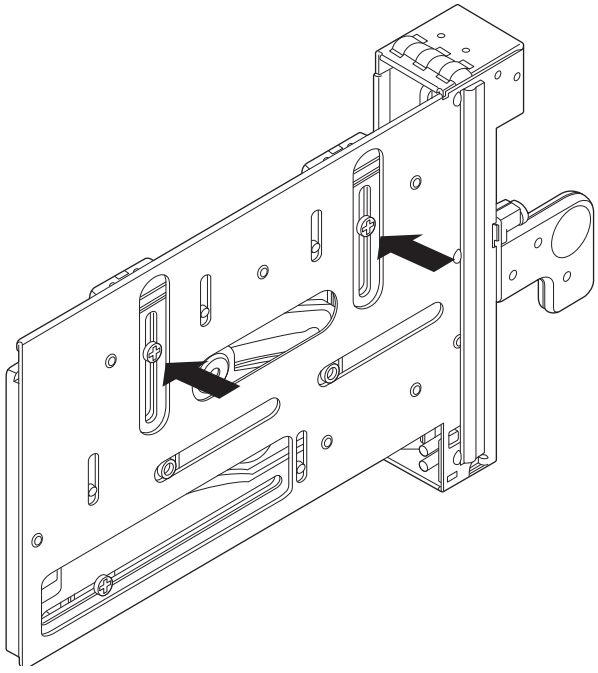
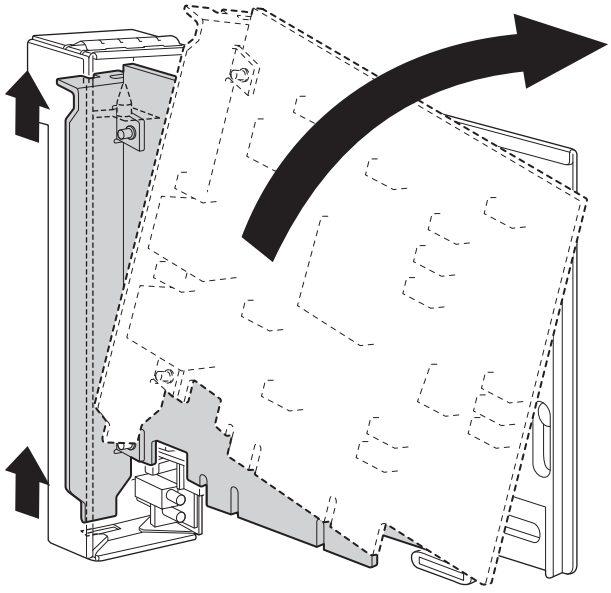


FIGURE 13-5 Removing the PCI Card



11. **Mount the replacement PCI card on the PCI cassette. (Perform this work on the conductive mat.)**

FIGURE 13-6 shows card positioning post and card positioning tab.

FIGURE 13-6 Card positioning post and card positioning tab

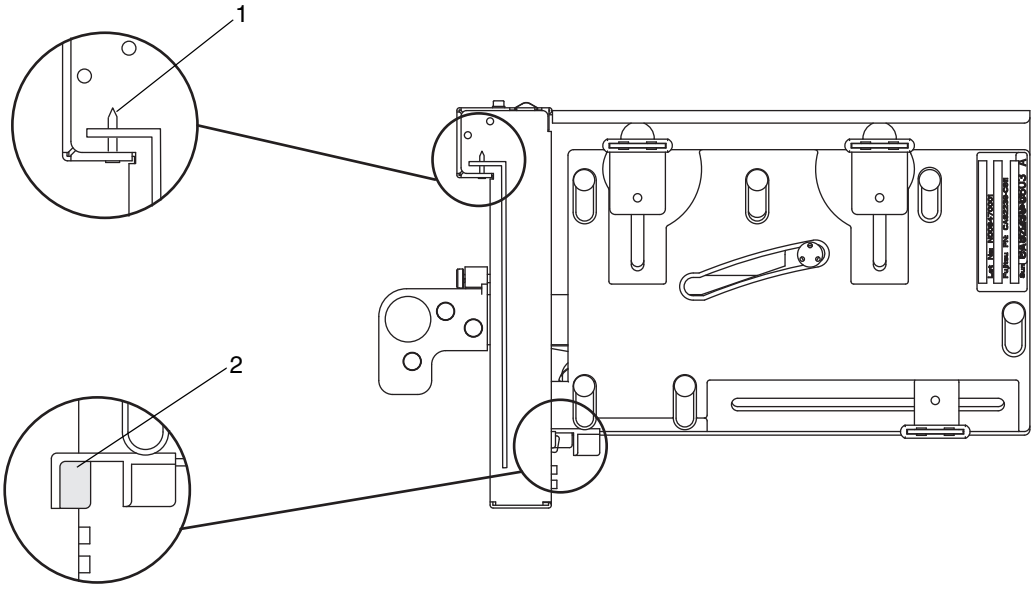


TABLE 13-2 Card positioning post and card positioning tab

Item	Description
1	Card positioning post
2	Card positioning tab

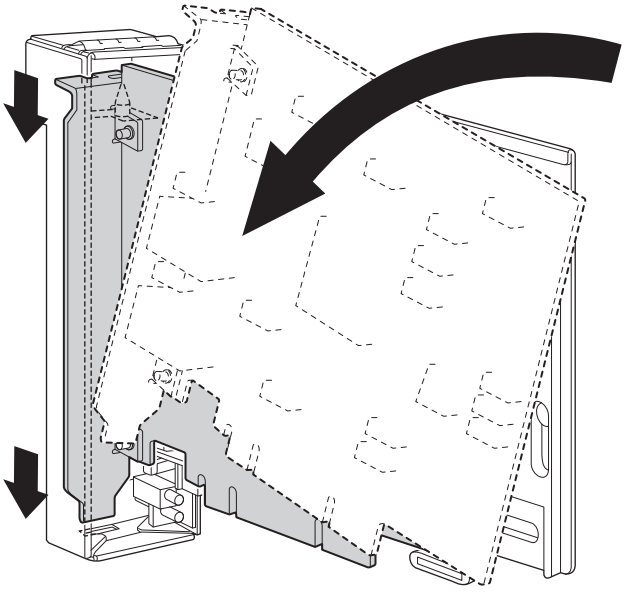
The post (item 1 in FIGURE 13-6) is seated in the notch of the bracket of the PCI card. If the post is not properly seated in the notch, the mounting bracket of the card may be bent and the card may end up being affixed in an inclined position on the PCI cassette. If a card is affixed in an inclined position, it will not be in proper electric contact with the socket on the IOU.

The tab (item 2 in FIGURE 13-6) fits in the notch on the lower part of the PCI card. This tab is helpful in positioning the card when it is mounted on the PCI cassette (however, some types of cards do not have the notch).

Note – When the PCI cassette is removed from the IOU, the tab raises the front of the card from the card connector.

a. Move the PCI card in the direction of the arrow, and mount it on the PCI cassette by inserting the part projecting out at the bottom of the bracket of the PCI card into the hole at the bottom of the front panel of the PCI cassette and inserting the pin of the PCI cassette into the oval hole at the top of the bracket of the PCI card.

FIGURE 13-7 Mounting the PCI Card



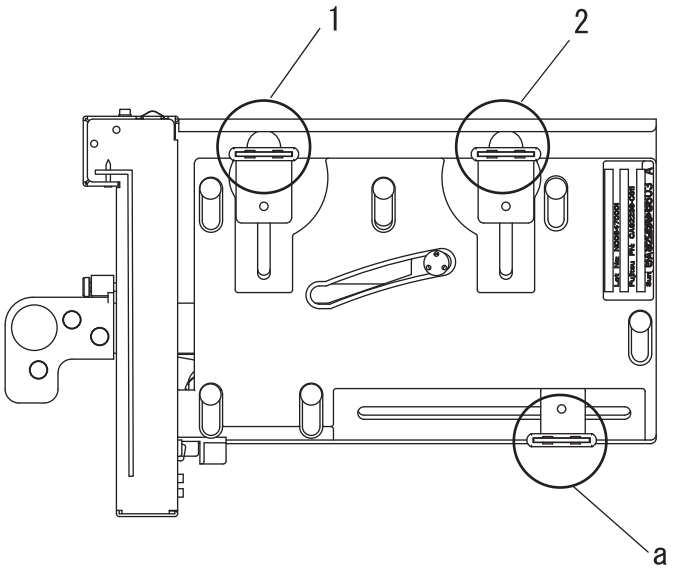
b. Push the PCI card until the notched part on the base plate of the PCI card touches the card-positioning tab from the PCI cassette.

Note – When fixing the PCI card in position after aligning it with the card positioning tab, do so while pulling the lever about 2 cm from the frame.

c. **Align the PCI card with the center part of the lower latch of the cassette. Then, while pressing the PCI card against the center part of each of the upper latches of the cassette, tighten the fixing screws in the sequence shown in** FIGURE 13-8 **to fix the card in position..**

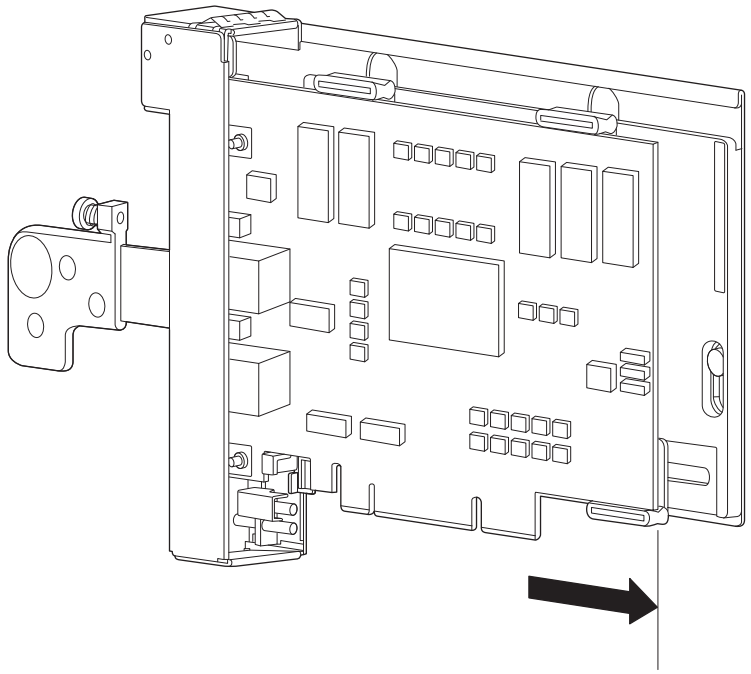
Note – To ensure that the PCI card is properly mounted, you need to confirm that the PCI card base is properly centered at the latches and securely fastened in position.

FIGURE 13-8 Sequence of Fixing the PCI Card in Position



Caution – If the card is short, move the screw at the bottom of the cassette as required. In such cases, place the latches as close as possible to the far end of the card. (FIGURE 13-9 reference)
To shift the location of the bottom screw for the PCI card, first secure the card at the lower latch (part a in FIGURE 13-8). Then, tighten the fixing screws in the sequence of 1-2 shown in FIGURE 13-8 to fix the card in position.

FIGURE 13-9 Latch Positions at the Bottom of the Cassette



12. **Mount the PCI cassette.**

    a. **Pull the lever of the PCI cassette until the PCI cassette is pulled out completely.**

    b. **Align the PCI cassette with the groove of the PCI slot, and insert the PCI cassette.**

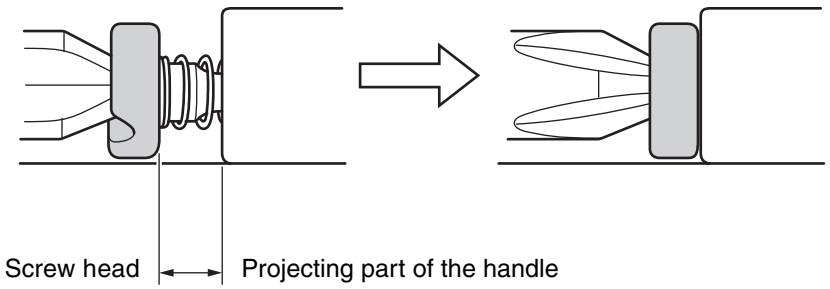
    c. **Press the upper part of the cassette until the cassette is inserted in the same position as the other cassettes.**

    d. **Push in the lever.**

e. Using a Phillips screwdriver, tighten the green screw.

Be sure to stop tightening the screw when the bottom of the screw head is flush with the projecting part of the handle. Otherwise, over tightening the screw may cause the projecting part of the handle to break. (See FIGURE 13-10.)

FIGURE 13-10 Tightening the Screw



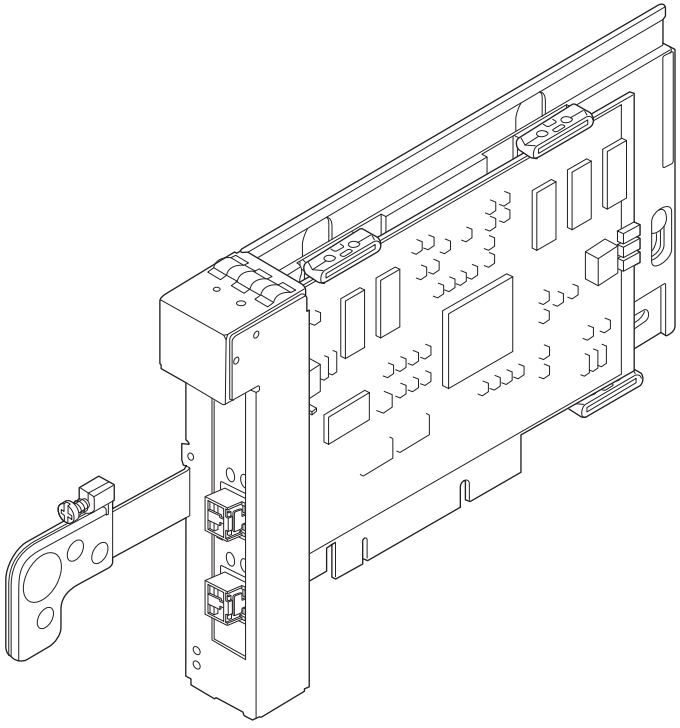
Caution – Align the PCI card with the slot guides, insert it carefully, and secure it firmly.

Caution – Do not forcibly push the PCI card when inserting it, even if it is not moving smoothly. If the PCI card is forcibly inserted despite the presence of any obstruction in the slot or any problem with a connector pin, serious damage may result.

- If the lever of a PCI cassette cannot be inserted:

  a. When the lever of the PCI cassette is pushed in but it stops halfway without reaching the far end, do not forcibly push it in any further. Instead, pull it out once and then insert it again.

FIGURE 13-11 Reinserting the Lever



b. If the lever stops halfway even when the PCI cassette is inserted again, pull the PCI cassette out from the IOU, and then check whether the PCI card is set in the normal position (see a, b, and c of Step 11). Then, reinsert the PCI cassette.

Caution – Do not forcibly push the lever of the PCI cassette when the lever is pushed but stops halfway. In this case, restore the lever to its original position, and then reinsert it. If the lever stops halfway even when the PCI cassette is inserted again, it is possible that the PCI card is not set in the normal position (see a, b, and c of Step 11). Pull the PCI cassette out from the IOU, verify the position of the PCI card, and then reinsert the PCI cassette.

13. **From the OS, execute the** `cfgadm -c connect` **<*PCI_ApId*> command to supply power to the PCI card.**

```
# cfgadm -c connect iou#0_pci#3
```

14. **From the OS, execute the** `cfgadm -c configure` **<*PCI_ApId*> command to configure the PCI card into the domain.**

```
# cfgadm -c configure iou#0_pci#3
```

15. **From the OS, execute the** `cfgadm -a` **command to confirm that the status of the PCI card has changed from "unconfigured" to "configured."**

```
# cfgadm -a
Ap_Id          Type    Receptacle Occupant    Condition
                       :
iou#0_pci#3  pci_pci/hp  connected  configured  ok
```

16. **Confirm that the replacement components are normal by using the** `showhardconf` **or** `showstatus` **command of XSCF.**

    Unless "*" is displayed for the replacement XSCFU, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

17. **Close the door on the server and lock it.**

13.3 Hot Replacement

The procedure for hot replacement is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Turn off power to the relevant domain.**

   From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -d` command.

   The shutdown processing is executed for the relevant domain, and then the power-off processing is executed.

3. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the PCI card is off.**

4. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

5. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

6. **Remove the PCI cassette of the PCI card to be replaced. (See** FIGURE 13-2**)**

Caution – To disconnect the link cable, which is a cable connected between the link card mounted on the server and external I/O expansion unit, pull the latch lock of the connector. If you forcibly pull the connector or the cable, the cable may be damaged.

Caution – When removing cables such as LAN cable, if your finger can't reach the latch lock of the connector, press the latch with a flathead screwdriver to remove the cable. Forcing your finger into the clearance can cause damage to the PCI card.

   a. **Using a Phillips screwdriver, loosen the green screw securing the lever.**

   b. **While grasping the upper part of the PCI cassette, pull the lever until it is stopped, and continue pulling it to pull out the PCI cassette.**

   c. **Place the removed PCI cassette on an antistatic mat.**

7. **Remove the PCI card from the PCI cassette. (Perform the work on the conductive mat.)**

   a. **While grasping the lock bracket, turn it in the direction of the arrow and push the lever a little. Then, push in the lever completely. (See** FIGURE 13-3**)**

      Once you start moving the lever, the lock bracket need not be held.

   b. **Loosen the two screws at the rear of the PCI cassette, slide out the latch, and secure it with screws. (See** FIGURE 13-4**)**

Caution – Do not loosen the screws at the bottom because they are used as a reference position.

   c. **Slide the PCI card in the direction of the arrow to remove it. (See** FIGURE 13-5**)**

8. **Mount the replacement PCI card on the PCI cassette. (Perform the work on the conductive mat.) (See** FIGURE 13-6 **and** TABLE 13-2**)**

   a. **Move the PCI card in the direction of the arrow, and mount it on the PCI cassette by inserting the part projecting out at the bottom of the bracket of the PCI card into the hole at the bottom of the front panel of the PCI cassette and inserting the pin of the PCI cassette into the oval hole at the top of the bracket of the PCI card. (See** FIGURE 13-7**)**

   b. **Push the PCI card until the notched part on the base plate of the PCI card touches the card-positioning tab from the PCI cassette.**

c. **Set the screws in the center part of each of the two latches, and then tighten the screws while pressing them against the PCI card.**

Note – When affixing the PCI card after aligning its position with the card-positioning tab, do so while pulling the lever about 2 cm from the frame.

Caution – If the card is short, move the screw at the bottom of the cassette as required. In such cases, place the latches as close as possible to the far end of the card. (See FIGURE 13-9)

---

9. **Mount the PCI cassette.**

   a. **Pull the lever of the PCI cassette until the PCI cassette is pulled out completely.**

   b. **Align the PCI cassette with the groove of the PCI slot, and insert the PCI cassette.**

   c. **Press the upper part of the cassette until the cassette is inserted in the same position as the other cassettes.**

   d. **Push in the lever.**

   e. **Using a Phillips screwdriver, tighten the green screw.**

Caution – Align the PCI card with the slot guides, insert it carefully, and secure it firmly.

Caution – Do not forcibly push the PCI card when inserting it, even if it is not moving smoothly. If the PCI card is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

- If the lever of a PCI cassette cannot be inserted:

  a. **When the lever of the PCI cassette is pushed in but it stops halfway without reaching the far end, do not forcibly push it in any further. Instead, pull it out once and then insert it again. (See FIGURE 13-11)**

b. If the lever stops halfway even when the PCI cassette is inserted again, pull the PCI cassette out from the IOU, and then check whether the PCI card is set in the normal position (see a, b and c of Step 8). Then, reinsert the PCI cassette.

Caution – Do not forcibly push the lever of the PCI cassette when the lever is pushed but stops halfway. In this case, restore the lever to its original position, and then reinsert it. If the lever stops halfway even when the PCI cassette is inserted again, it is possible that the PCI card is not set in the normal position (see a, b and c of Step 7). Pull the PCI cassette out from the IOU, check the position of the PCI card, and then reinsert it.

---

10. **Turn on power to the relevant domain.**

    From a console that is connected to XSCF, execute the `poweron -d` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

11. **Close the door on the server, and lock it.**

13.4 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

---

2. **Change the mode switch setting on the OPNL from the Locked position to the Service position.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

3. **Stop (turn off power) all domains together. Take either of the following two actions:**
   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.
4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the PCI card is off.**
5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **Remove the PCI cassette of the PCI card to be replaced.**

Caution – To disconnect the link cable, which is a cable connected between the link card mounted on the server and external I/O expansion unit, pull the latch lock of the connector. If you forcibly pull the connector or the cable, the cable may be damaged.

Caution – When removing cables such as LAN cable, if your finger can't reach the latch lock of the connector, press the latch with a flathead screwdriver to remove the cable. Forcing your finger into the clearance can cause damage to the PCI card.

   a. **Using a Phillips screwdriver, loosen the green screw securing the lever.**

   b. **While grasping the upper part of the PCI cassette, pull the lever until it is stopped, and continue pulling it to pull out the PCI cassette.**

   c. **Place the removed PCI cassette on an antistatic mat.**

9. **Remove the PCI card from the PCI cassette. (Perform the work on the conductive mat.)**

   a. **While grasping the lock bracket, turn it in the direction of the arrow and push the lever a little. Then, push in the lever completely. (See** FIGURE 13-3**)**

      Once you start moving the lever, the lock bracket need not be held.

   b. **Loosen the two screws at the rear of the PCI cassette, slide out the latch, and secure it with screws. (See** FIGURE 13-4**)**

Note – Do not loosen the screws at the bottom because they are used as a reference position.

   c. **Slide the PCI card in the direction of the arrow to remove it. (See** FIGURE 13-5**)**

10. **Mount the replacement PCI card on the PCI cassette. (Perform the work on the conductive mat.)**

    a. **Move the PCI card in the direction of the arrow, and mount it on the PCI cassette by inserting the part projecting out at the bottom of the bracket of the PCI card into the hole at the bottom of the front panel of the PCI cassette and inserting the pin of the PCI cassette into the oval hole at the top of the bracket of the PCI card.**

    b. **Push the PCI card until the notched part on the base plate of the PCI card touches the part projecting from the PCI cassette.**

    c. **Push in the two latches on the PCI card, and tighten the screws.**

Note – If the card is short, move the screw at the bottom of the cassette as required. In such cases, place the latches as close as possible to the far end of the card. (See FIGURE 13-9)

---

11. **Mount the PCI cassette.**

    a. **Pull the lever of the PCI cassette until the PCI cassette is pulled out completely**

    b. **Align the PCI cassette with the groove of the PCI slot, and insert the PCI cassette.**

    c. **Press the upper part of the cassette until the cassette is inserted in the same position as the other cassettes.**

    d. **Push in the lever.**

    e. **Using a Phillips screwdriver, tighten the green screw.**

Caution – Align the PCI card with the slot guides, insert it carefully, and secure it firmly.

Caution – Do not forcibly push the PCI card when inserting it, even if it is not moving smoothly. If the PCI card is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

---

12. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

13. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

14. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

15. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

16. **Close the door on the server, and lock it.**

CHAPTER 14

CD-RW/DVD-RW Drive Unit Replacement

This chapter explains the replacement procedures for a CD-RW/DVD-RW drive unit (DVDU). It covers the following:

- Section 14.1, "Overview of a CD-RW/DVD-RW Drive Unit" on page 14-1
- Section 14.2, "Active Replacement" on page 14-5
- Section 14.3, "Hot Replacement" on page 14-9
- Section 14.4, "Cold Replacement" on page 14-11

There are three methods for replacing a CD-RW/DVD-RW drive unit: active replacement, hot replacement, and cold replacement. For the definition of each type of method, see Chapter 4.

14.1 Overview of a CD-RW/DVD-RW Drive Unit

This section provides an overview of CD-RW/DVD-RW drive units and describes their mounting locations.

A CD-RW/DVD-RW drive unit is a device for an optical disk that can be used for high-capacity data recording in digital form. One CD-RW/DVD-RW drive unit is mounted in each of the M8000, M9000 (base cabinet), and SPARC Enterprise M9000 server (expansion cabinet) model. Active replacement and hot replacement can be performed on a CD-RW/DVD-RW drive unit.

FIGURE 14-1, FIGURE 14-2, and FIGURE 14-3 show the mounting location of the CD-RW/DVD-RW drive unit.

FIGURE 14-1 CD-RW/DVD-RW Drive Unit Mounting Location (Front of the M8000)

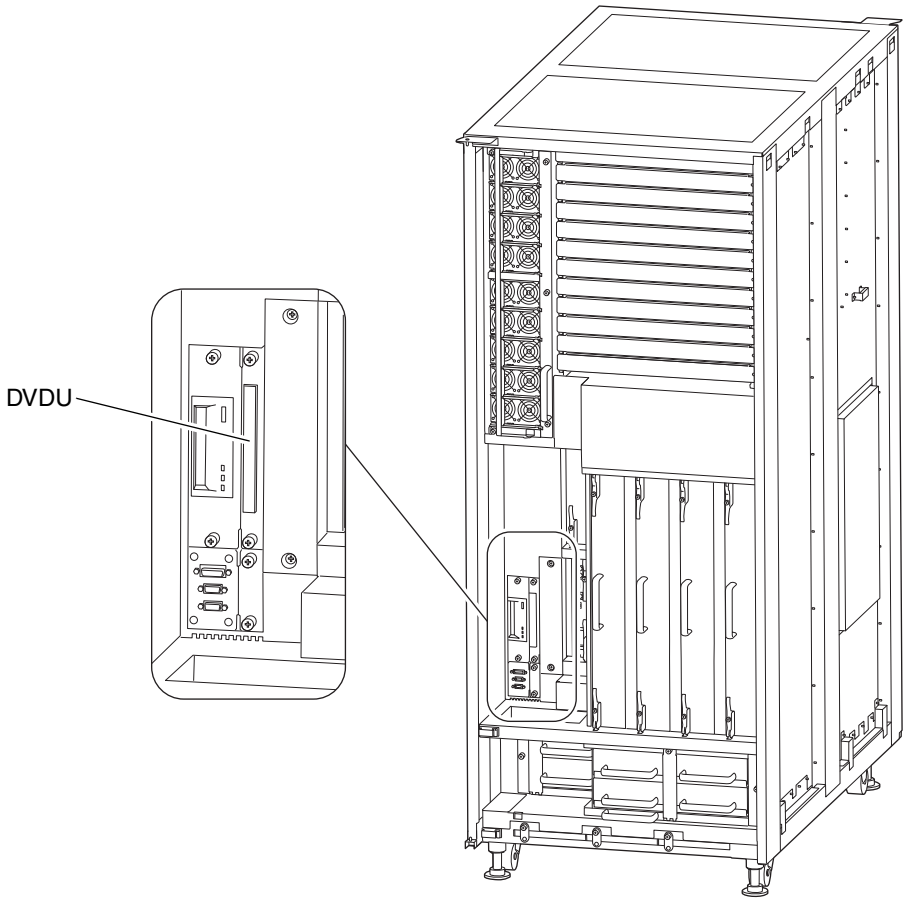


FIGURE 14-2 CD-RW/DVD-RW Drive Unit Mounting Location (Front of the M9000 Base Cabinet)

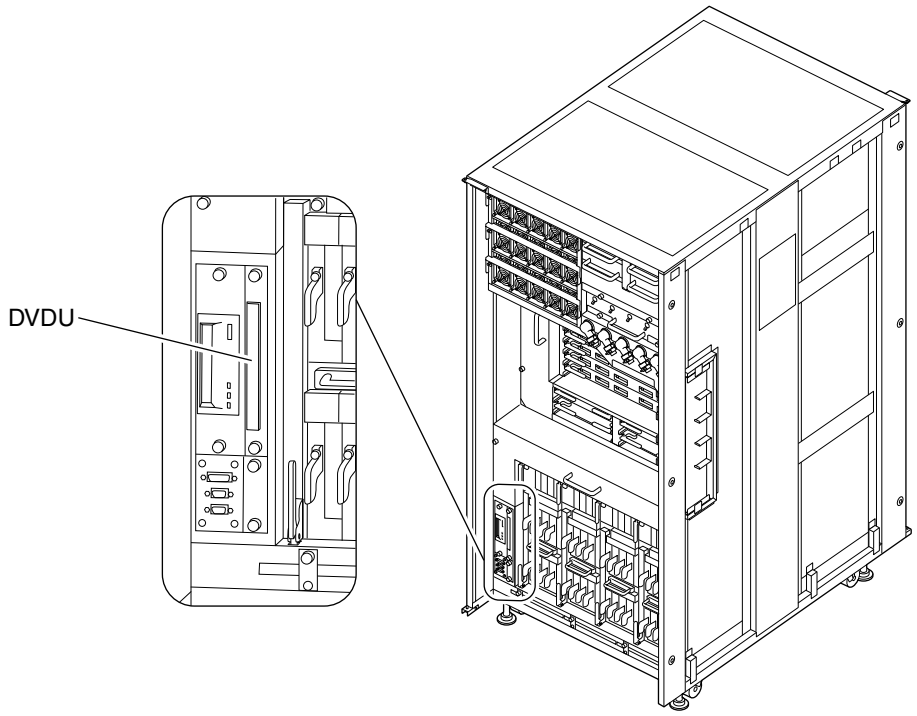


FIGURE 14-3 CD-RW/DVD-RW Drive Unit Mounting Location (Front of M9000 with the Expansion Cabinet)

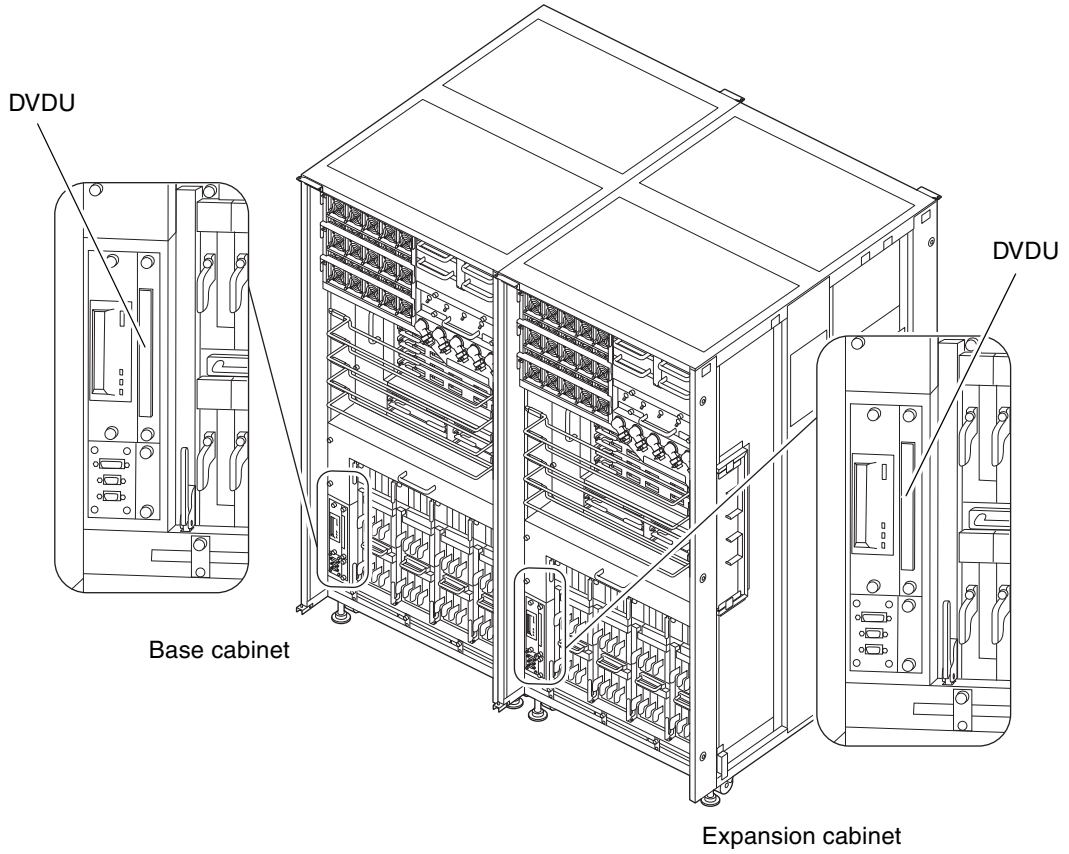


TABLE 14-1 shows the abbreviated name of the CD-RW/DVD-RW drive unit.

TABLE 14-1 Abbreviated Name of the CD-RW/DVD-RW Drive Unit

Part name	Abbreviated name
CD-RW/DVD-RW drive unit	DVDU

14.2 Active Replacement

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Stop all connection to the target CD-RW/DVD-RW drive unit.**

3. **From the OS, execute the `cfgadm -a` command to verify the Ap_Id of CD-RW/DVD-RW drive unit.**

   Example: If the CD-RW/DVD-RW drive unit is `c0t4d0`,

```
Ap_Id              Type    Receptacle   Occupant    Condition
                                  :
c0::dsk/c0t4d0     CD-ROM  connected    configured  unknown
```

   The Ap_Id which verified here is referred to as DVD_ApId, and the subsequent `cfgadm` operations to CD-RW/DVD-RW drive unit use DVD_ApId.

4. **From the OS, execute the `cfgadm -c unconfigure` *DVD_Ap_Id* command to unconfigure the CD-RW/DVD-RW drive unit from the domain.**

```
# cfgadm -c unconfigure c0::dsk/c0t4d0
```

5. **Stop the connection to a tape drive unit if it happens to be on the same controller as the target CD-RW/DVD-RW drive unit.**

6. **From the OS, execute the `cfgadm -a` command to verify the Ap_Id of tape drive unit.**

   Example: If the tape drive unit is `rmt/0`,

```
# cfgadm -a
Ap_Id       Type  Receptacle   Occupant   Condition
       :
c0::rmt/0 tape  connected    configured unknown
```

   The Ap_Id which verified here is referred to as TAPE_ApId, and the subsequent cfgadm operations to tape drive unit use TAPE_ApId.

7. **From the OS, execute the** `cfgadm -c unconfigure` *TAPE_Ap_Id* **command to unconfigure the tape drive unit from the domain.**

```
# cfgadm -c unconfigure c0::rmt/0
```

8. **From the OS, execute the** `cfgadm -a` **command to verify that the status of CD-RW/DVD-RW drive unit and tape drive unit has changed from "configured" to "unconfigured."**

```
# cfgadm -a
Ap_Id           Type    Receptacle  Occupant      Condition
                    :
c0::dsk/c0t4d0   CD-ROM  connected   unconfigured   unknown
c0::rmt/0        tape     connected   unconfigured   unknown
                    :
```

9. **Detach the target CD-RW/DVD-RW drive unit from the port.**

   From the terminal that is connected to XSCF, log in to XSCF, and execute the `cfgdevice -c detach -p` *port no.* command.

10. **Confirm that the target CD-RW/DVD-RW drive unit is unconfigured from the domain.**

    From XSCF, execute `cfgdevice -l` to confirm that the relevant port is not displayed in the current connection.

11. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

12. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

13. **Remove the CD-RW/DVD-RW drive unit to be replaced.**

    a. **Using a Phillips screwdriver, loosen the two knob screws securing the CD-RW/DVD-RW drive unit to be replaced.**

    b. **While grasping the knob screws, pull out the CD-RW/DVD-RW drive unit slowly from the slot.**

FIGURE 14-4 Removing the CD-RW/DVD-RW Drive Unit (Front of the M8000)

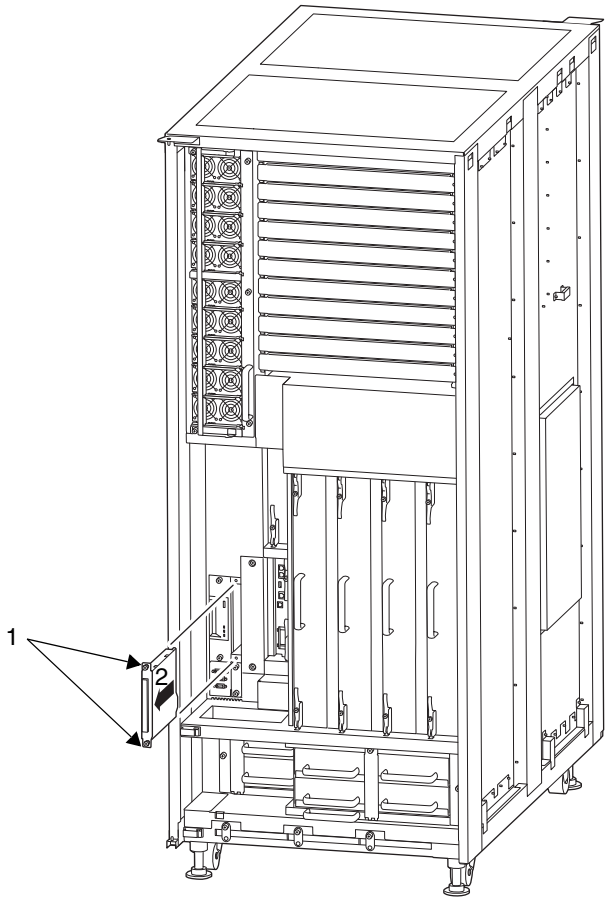
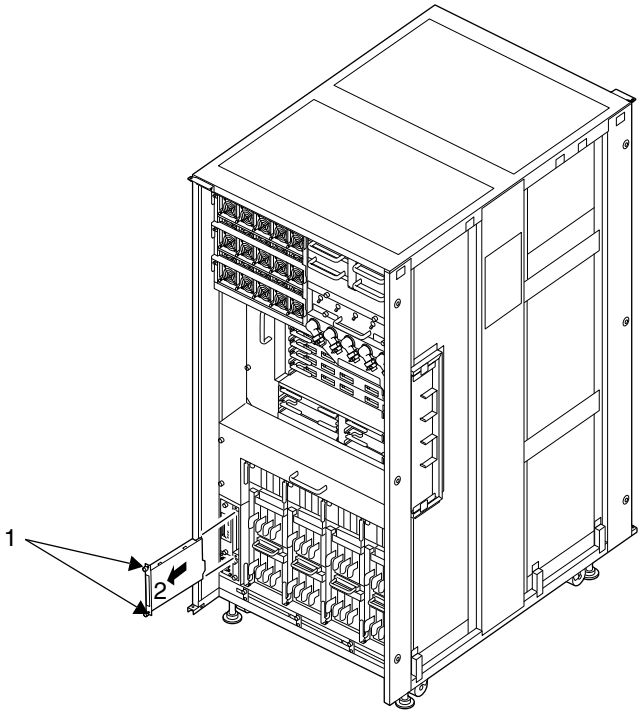


FIGURE 14-5 Removing the CD-RW/DVD-RW Drive Unit (Front of the M9000)



14. **Place the removed CD-RW/DVD-RW drive unit on an antistatic mat.**

15. **Mount the replacement CD-RW/DVD-RW drive unit by following the removal instructions in** Step 13 **in reverse order. Align the CD-RW/DVD-RW drive unit with the slot guides, insert it carefully, and secure it firmly.**

16. **Attach the CD-RW/DVD-RW drive unit to the port.**

    Execute the `cfgdevice -c attach -p` *port no.* command of XSCF.

17. **Confirm that the replaced CD-RW/DVD-RW drive unit is configured to the domain.**

    From XSCF, execute the `cfgdevice -l` command to verify that the specified Port number is displayed in the current connection.

18. **From the OS, execute the `cfgadm -c configure` *DVD_Ap_Id* command to configure the CD-RW/DVD-RW drive unit to the domain.**

```
# cfgadm -c configure c0::dsk/c0t4d0
```

19. **From the OS, execute the** `cfgadm -c configure` *TAPE_Ap_Id* **command to configure the tape drive unit to the domain.**

```
# cfgadm -c configure c0::rmt/0
```

20. **From the OS, execute the** `cfgadm -a` **command to verify that the status of CD-RW/DVD-RW drive unit and the tape drive unit has changed from "unconfigured" to "configured."**

```
# cfgadm -a
Ap_Id           Type   Receptacle  Occupant     Condition
                        :
c0::dsk/c0t4d0  CD-ROM  connected   configured   unknown
c0::rmt/0       tape    connected   configured   unknown
                        :
```

21. **Close the door on the server, and lock it.**

14.3 Hot Replacement

The procedure is as follows.

1. **Unlock and open the appropriate door on the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Stop all connection to the target CD-RW/DVD-RW drive unit.**

3. **Turn off power to the relevant domain.**

   From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -d` command.

   The OS shutdown processing is executed for the relevant domain, and then the power-off processing is executed.

4. **Detach the target CD-RW/DVD-RW drive unit from the port.**

   From a terminal that is connected to XSCF, log in to XSCF, and execute the cfgdevice -c detach -p <*port no.*> command.

5. **Confirm that the target CD-RW/DVD-RW drive unit is unconfigured from the domain.**

   From XSCF, execute cfgdevice -l to confirm that the relevant port is not displayed in the current connection.

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **Remove the CD-RW/DVD-RW drive unit to be replaced. (See** FIGURE 14-4 **or** FIGURE 14-5**)**

   a. **Using a Phillips screwdriver, loosen the two knob screws securing the CD-RW/DVD-RW drive unit.**

   b. **While grasping the knob screws, pull out the CD-RW/DVD-RW drive unit slowly from the slot.**

9. **Place the removed CD-RW/DVD-RW drive unit on an antistatic mat.**

10. **Mount the replacement CD-RW/DVD-RW drive unit by following the removal instructions in** Step 8 **in reverse order.**

Caution – Do not forcibly push the CD-RW/DVD-RW drive unit in when inserting it. If the CD-RW/DVD-RW drive unit is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

11. **Attach the CD-RW/DVD-RW drive unit to the port.**

    Execute the `cfgdevice -c attach -p` <*port no.*> command of XSCF.

12. **Confirm that the replacement CD-RW/DVD-RW drive unit is configured to the domain.**

    From XSCF, execute the cfgdevice -l command to confirm that the specified port number is displayed in the current connection.

13. **Turn on the power to the relevant domain.**

    From a console that is connected to XSCF, execute the `poweron -d` command of XSCF.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

14. **Start up domains as necessary.**

15. **Close the door on the server and lock it.**

14.4 Cold Replacement

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5**.**

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the OPNL from the Locked position to the Service position.**

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, “Main Line Switch Locations” on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Remove the CD-RW/DVD-RW drive unit to be replaced. (See** FIGURE 14-4 **or** FIGURE 14-5**)**

   a. **Using a Phillips screwdriver, loosen the two knob screws securing the CD-RW/DVD-RW drive unit to be replaced.**

   b. **While grasping the knob screws, pull out the CD-RW/DVD-RW drive unit slowly from the slot.**

9. **Place the removed CD-RW/DVD-RW drive unit on an antistatic mat.**

10. **Mount the replacement CD-RW/DVD-RW drive unit by following the removal instructions in Step 8 in reverse order.**

Caution – Do not forcibly push the CD-RW/DVD-RW drive unit in when inserting it. If the CD-RW/DVD-RW drive unit is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

11. **Switch on all main line switches for the AC section (ACS) in the power supply system.**
12. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**
13. **Start (turn on power) all domains together. Take either of the following two actions:**
    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

      For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.
14. **Start the domain as necessary.**
15. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

16. **Close the door on the server, and lock it.**

CHAPTER 15

Tape Drive Unit Replacement

This chapter explains the replacement procedure for the tape drive unit (TAPEU). It covers the following:

- Section 15.1, “Overview of the Tape Drive Unit” on page 15-1
- Section 15.2, “Active Replacement” on page 15-5
- Section 15.3, “Hot Replacement” on page 15-9
- Section 15.4, “Cold Replacement” on page 15-11

There are three methods for replacing a tape drive unit: active replacement, hot replacement, and cold replacement. For the definition of each type of method, see Section 4.1, “Types of Replacement Procedures” on page 4-2.

Note – Contact your sales representative for tape drive unit options on SPARC Enterprise M8000/M9000 servers.

15.1 Overview of the Tape Drive Unit

This section provides an overview of tape drive unit s and describes their mounting locations. Since the tape was originally called a digital audio tape, it is sometimes referred to as a DAT.

One tape drive unit can be mounted in each cabinet. Active replacement and hot replacement can be performed on a tape drive unit.

FIGURE 15-1, FIGURE 15-2, and FIGURE 15-3 show the mounting locations of tape drive unit.

FIGURE 15-1 Tape Drive Unit Mounting Locations (Front of the M8000)

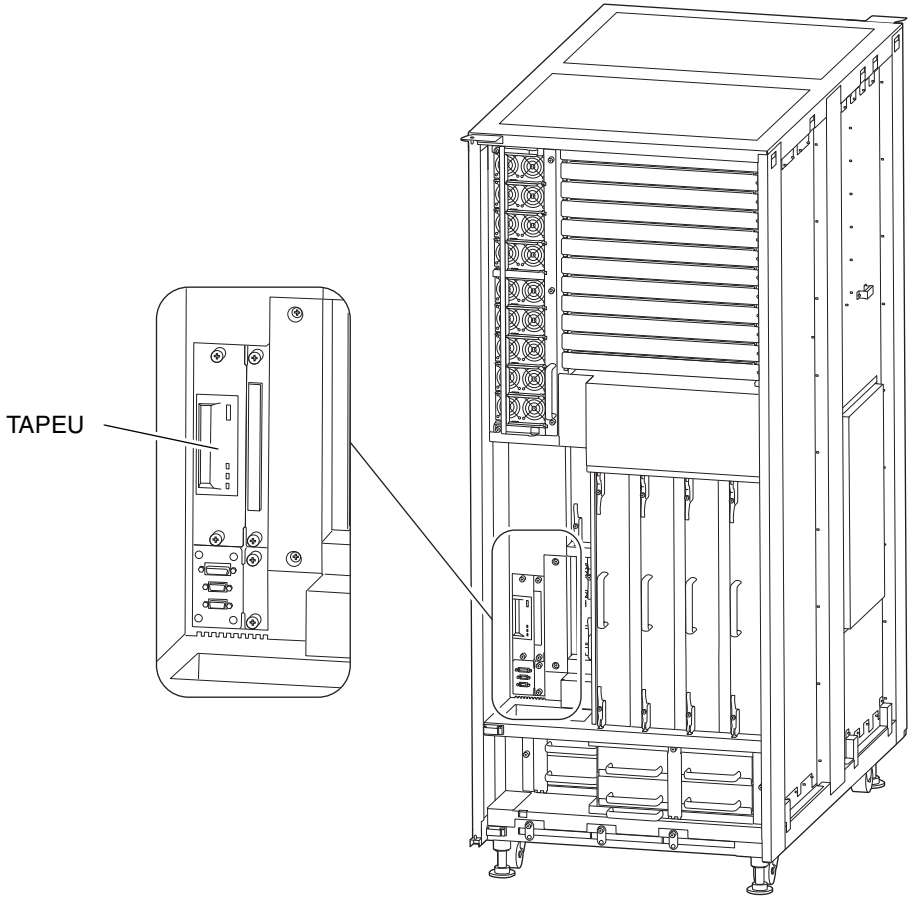


FIGURE 15-2 Tape Drive Unit Mounting Locations (Front of the M9000 Base Cabinet)

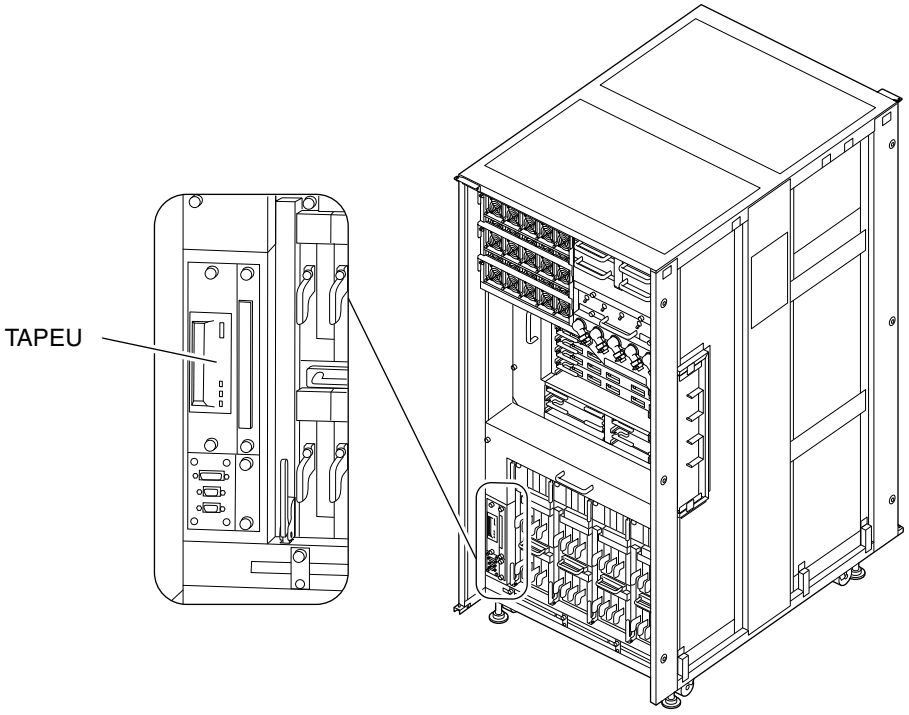


FIGURE 15-3 Tape Drive Unit Mounting Locations (Front of M9000 with the Expansion Cabinet)

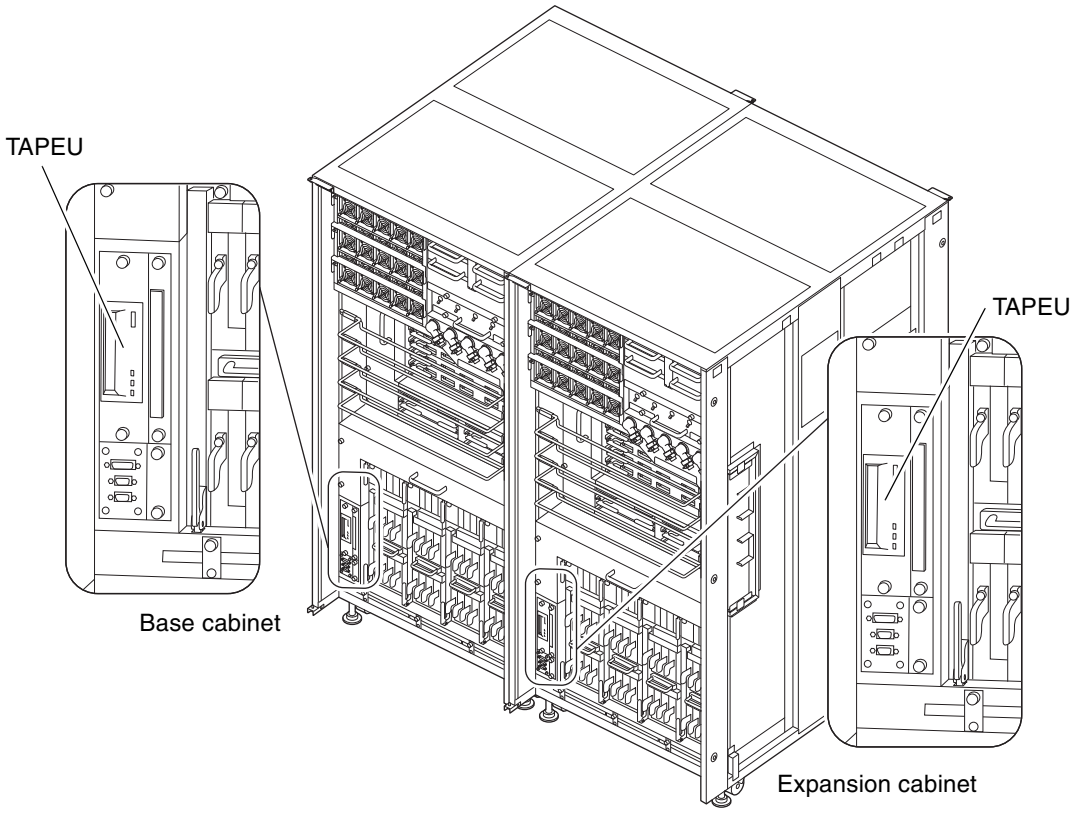


TABLE 15-1 shows the abbreviated name of the tape drive unit.

TABLE 15-1 Abbreviated Name of the Tape Drive Unit

Part name	Abbreviated name
Tape drive unit	TAPEU

15.2 Active Replacement

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Stop all connection to the target tape drive unit.**

3. **From the OS, execute the** `cfgadm -a` **command to verify the Ap_Id of tape drive unit.**

   Example: If tape drive unit is `rmt/0`,

```
# cfgadm -a
Ap_Id      Type     Receptacle   Occupant   Condition
                   :
c0::rmt/0 tape connected   configured unknown
```

   The Ap_Id which verified here is referred to as TAPE_ApId, and the subsequent `cfgadm` operations to tape drive unit use TAPE_ApId.

4. **From the OS, execute the** `cfgadm -c unconfigure` *TAPE_Ap_Id* **command to unconfigure the tape drive unit from the domain.**

```
# cfgadm -c unconfigure c0::rmt/0
```

5. **Stop the connection to the CD-RW/DVD-RW drive unit on the same controller as the target tape drive unit.**

6. **From the OS, execute the** `cfgadm -a` **command to verify the Ap_Id of CD-RW/DVD-RW drive unit.**

   Example: If CD-RW/DVD-RW drive unit is `c0t4d0`,

```
# cfgadm -a
Ap_Id            Type    Receptacle    Occupant    Condition
                        :
c0::dsk/c0t4d0   CD-ROM  connected   configured   unknown
```

   The Ap_Id which verified here is referred to as DVD_ApId, and the subsequent cfgadm operations to CD-RW/DVD-RW drive unit uses DVD_ApId.

7. **From the OS, execute the** `cfgadm -c unconfigure` *DVD_Ap_Id* **command to unconfigure the CD-RW/DVD-RW drive unit from the domain.**

```
# cfgadm -c unconfigure c0::dsk/c0t4d0
```

8. **From the OS, execute the** `cfgadm -a` **command to verify that the status of tape drive unit and CD-RW/DVD-RW drive unit has changed from "configured" to "unconfigured."**

```
# cfgadm -a
Ap_Id              Type    Receptacle   Occupant       Condition
                        :
c0::dsk/c0t4d0   CD-ROM  connected   unconfigured   unknown
c0::rmt/0        tape    connected   unconfigured   unknown
                      :
```

9. **Detach the target tape drive unit from the port.**

   From the terminal that is connected to XSCF, log in to XSCF, and execute the `cfgdevice -c detach -p` *port no.* command.

10. **Confirm that the target tape drive unit is unconfigured from the domain.**

    From XSCF, execute `cfgdevice -l` to confirm that the relevant port is not displayed in the current connection.

11. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

12. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

13. **Remove the tape drive unit to be replaced.**

    a. **Using a Phillips screwdriver, loosen the two knob screws securing the tape drive unit to be replaced.**

    b. **While grasping the knob screws, pull out the tape drive unit slowly from the slot.**

FIGURE 15-4 Removing the Tape Drive Unit (Front of the M8000)

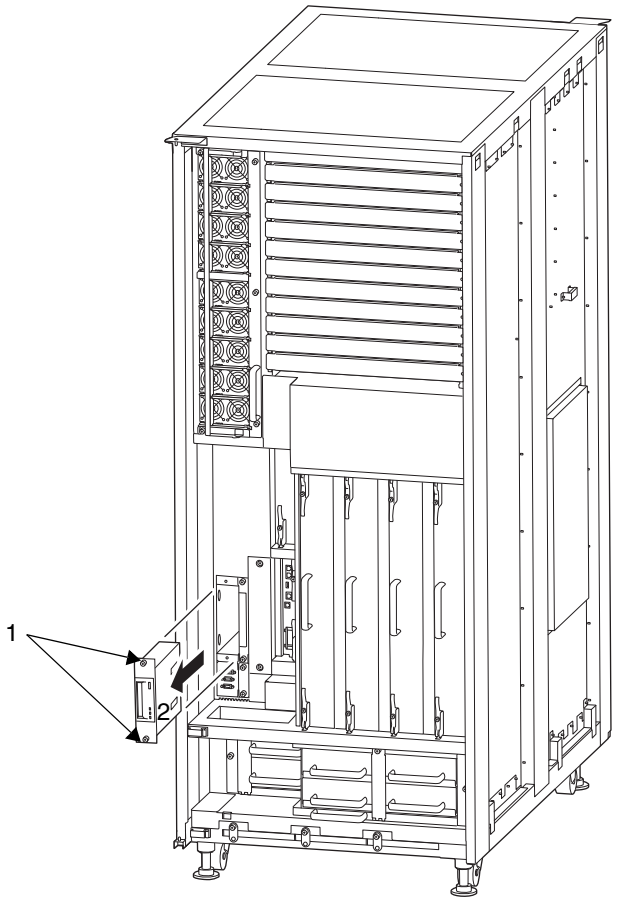
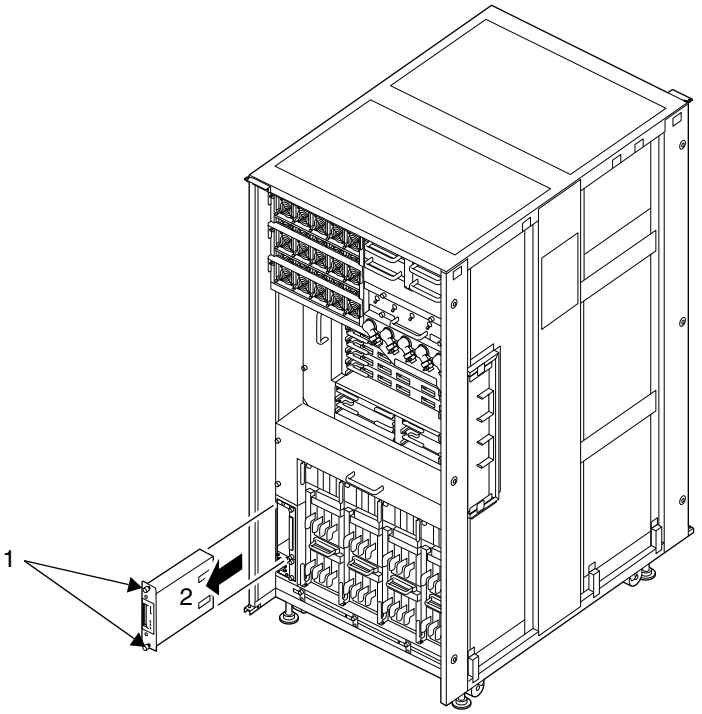


FIGURE 15-5 Removing the Tape Drive Unit (Front of the M9000)



14. **Place the removed tape drive unit on an antistatic mat.**

15. **Mount the replacement tape drive unit by following the removal instructions in** Step 13 **in reverse order. Align the tape drive unit with the slot guides, insert it carefully, and secure it firmly.**

16. **Attach the tape drive unit to the port.**

    Execute the `cfgdevice -c attach -p` *port no.* command of XSCF.

17. **Confirm that the replaced tape drive unit is configured to the domain.**

    From XSCF, execute the `cfgdevice -l` command to verify that the specified Port number is displayed in the current connection.

18. **From the OS, execute the** `cfgadm -c configure` *TAPE_Ap_Id* **command to configure the tape drive unit to the domain.**

```
# cfgadm -c configure c0::rmt/0
```

19. **From the OS, execute the** `cfgadm -c configure` *DVD_Ap_Id* **command to configure the CD-RW/DVD-RW drive unit to the domain.**

```
# cfgadm -c configure c0::dsk/c0t4d0
```

20. **From the OS, execute the `cfgadm -a` command to verify that the status of tape drive unit and the CD-RW/DVD-RW drive unit has changed from "unconfigured" to "configured."**

```
# cfgadm -a
Ap_Id          Type     Receptacle   Occupant    Condition
               :
c0::dsk/c0t4d0   CD-ROM  connected   unconfigured   unknown
c0::rmt/0        tape    connected   unconfigured   unknown
                     :
```

21. **Close the door on the server, and lock it.**

15.3 Hot Replacement

The procedure is as follows.

1. **Unlock and open the appropriate door on the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Stop all connection to the target tape drive unit.**

3. **Turn off power to the relevant domain.**

   From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -d` command.

   The OS shutdown processing is executed for the relevant domain, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Detach the target tape drive unit from the port.**

   From a terminal that is connected to XSCF, log in to XSCF, and execute the `cfgdevice -c detach -p` <*port no.*> command.

6. **Confirm that the target tape drive unit is unconfigured from the domain.**

   From XSCF, execute `cfgdevice -l` to confirm that the relevant port is not displayed in the current connection.

7. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

8. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

9. **Remove the tape drive unit to be replaced. (See** FIGURE 15-4 **or** FIGURE 15-5**)**

   a. **Using a Phillips screwdriver, loosen the two knob screws securing the tape drive unit.**

   b. **While grasping the knob screws, pull out the tape drive unit slowly from the slot.**

10. **Place the removed tape drive unit on an antistatic mat.**

11. **Mount the replacement tape drive unit by following the removal instructions in** Step 9 **in reverse order.**

Caution – Do not forcibly push the tape drive unit in when inserting it. If the tape drive unit is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

12. **Attach the tape drive unit to the port.**

    Execute the `cfgdevice -c attach -p` <*port no.*> command of XSCF.

13. **Confirm that the replacement tape drive unit is configured to the domain.**

    From XSCF, execute the `cfgdevice -l` command to confirm that the specified port number is displayed in the current connection.

14. **Turn on the power to the relevant domain.**

    From a console that is connected to XSCF, execute the `poweron -d` command of XSCF.

    For details of the power-on operation, see Section 4.4.2, “Powering the Server On” on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User’s Guide*.

15. **Start up domains as necessary.**

16. **Close the door on the server and lock it.**

15.4 Cold Replacement

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**
3. **Stop (turn off power) all domains together. Take either of the following two actions:**
   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.
4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, “Main Line Switch Locations” on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Remove the tape drive unit to be replaced. (See** FIGURE 15-4 **or** FIGURE 15-5**)**

   a. **Using a Phillips screwdriver, loosen the two knob screws securing the tape drive unit to be replaced.**

   b. **While grasping the knob screws, pull out the tape drive unit slowly from the slot.**

9. **Place the removed tape drive unit on an antistatic mat.**

10. **Mount the replacement tape drive unit by following the removal instructions in Step 8 in reverse order.**

Caution – Do not forcibly push the tape drive unit in when inserting it. If the tape drive unit is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

11. **Switch on all main line switches for the AC section (ACS) in the power supply system.**
12. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**
13. **Start (turn on power) all domains together. Take either of the following two actions:**
    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.
14. **Start the domain as necessary.**
15. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

16. **Close the door on the server, and lock it.**

CHAPTER 16

Clock Control Unit Replacement

This chapter explains the replacement procedure for the clock control unit (CLKU). It covers the following:

- Section 16.1, "Overview of the CLKU" on page 16-1
- Section 16.2, "Cold Replacement" on page 16-4

Cold replacement is the only swapping method that can be used for the CLKU. For the definition of the swapping method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

16.1 Overview of the CLKU

This section provides an overview of the CLKU and describes its mounting locations.

The CLKU is mounted only in the M9000, and it supplies clock signals to CPU memory board units (CMUs) and crossbar units (XBUs). CLKUs are duplicated, but active maintenance cannot be performed on them. For the M9000 with the expansion cabinet, there are cables available for connecting the clocks in the base cabinet to those in the extension cabinet.

FIGURE 16-1 and FIGURE 16-2 show the CKLU mounting locations in the cabinets of the M9000 (base cabinet) and M9000 (with the expansion cabinet), respectively.

FIGURE 16-1 CLKU Mounting Locations (Front of the M9000 Base Cabinet)

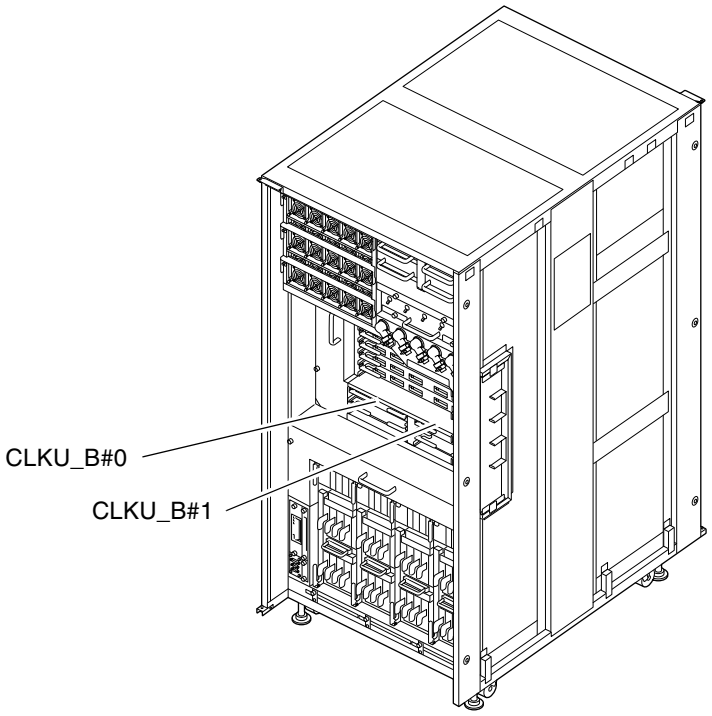


FIGURE 16-2 CLKU Mounting Locations (Front of M9000 with the Expansion Cabinet)

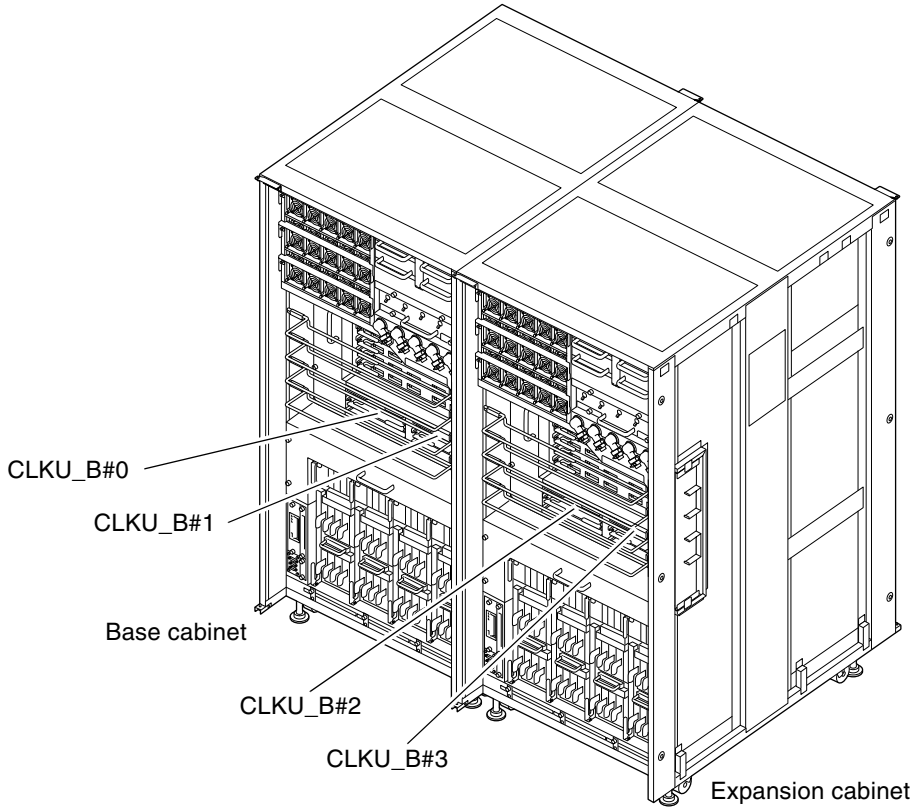


TABLE 16-1 lists the abbreviated names and component numbers of CLKUs.

TABLE 16-1 Abbreviated Names and Numbers of CLKUs

Model name	Abbreviated names and numbers
M9000 base cabinet	CLKU_B #0, 1
M9000 expansion cabinet	CLKU_B #2, 3

16.2 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, “Main Line Switch Locations” on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Remove the CLKU to be replaced. (See FIGURE 16-3)**

   a. **If the M9000 expansion cabinet is installed, slide the cable support bracket at the front of the clock control unit up or down by one hole, and then use a flathead screwdriver to remove the cable connected to the clock control unit. (four cables from the base unit and two from the expansion unit).**

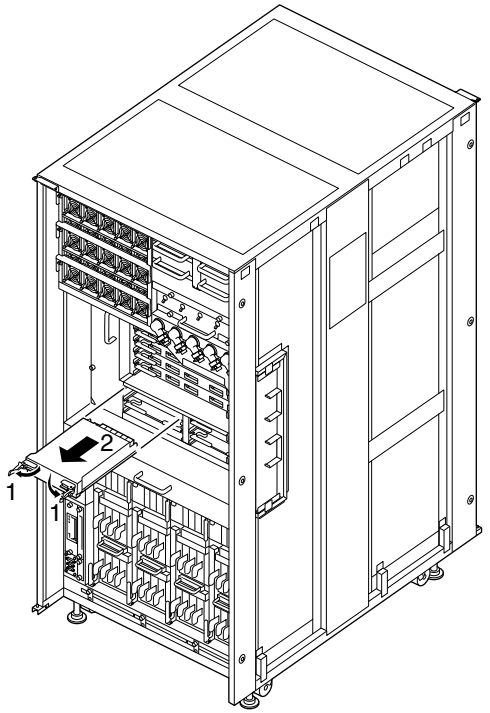
   b. **Using a Phillips screwdriver, turn the knob screws securing the left and right eject/lock levers 90 to 180 degrees to unlock the levers. (Turn the knob screw while lightly pulling the lever by one hand.)**

Caution – Move the cable support bracket of the crossbar unit up by one hole for the work.

   c. **Unlock the eject/lock levers to pull the CLKU off the backplane.**

   d. **While grasping the eject/lock levers, pull out the CLKU slowly from the slot.**

FIGURE 16-3 Removing the CLKU (Front of the M9000 Base Cabinet)



9. **Place the removed CLKU on an antistatic mat.**

10. **Mount the replacement CLKU by following the removal instructions in Step 8 in reverse order. Align the CLKU with the slot guides, insert it carefully, and secure it firmly.**

    Push the eject/lock levers as far as they will go, and then push the knob screws on the right and left eject/lock levers to lock them in position. If the knob screws remain in position, the clock control unit is securely mounted.

Note – Use a torque screwdriver to secure the clock cable connector with the torque of 0.2N*m (2.0kgf*cm).

Caution – If you are unable to obtain a torque screwdriver, finger tighten the clock cable connectors. Do not secure them with a regular screwdriver.

Caution – Do not forcibly push the CLKU when inserting it, even if it is not moving smoothly. If the CLKU is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

---

11. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

12. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

13. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a command` of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

14. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement CLKU, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

15. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

16. **Close the door on the server, and lock it.**

CHAPTER 17

Crossbar Unit Replacement

This chapter explains the replacement procedure for crossbar units (XBUs). It covers the following:

- Section 17.1, "Overview of XBUs" on page 17-1
- Section 17.2, "Cold Replacement" on page 17-4

As a replacement method for XBUs, only the cold replacement method can be used. For the definition of the replacement method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

17.1 Overview of XBUs

This section provides an overview of XBUs and describes their mounting locations.

XBUs are mounted only in the M9000. XBUs logically switch between connections to CPU memory board units (CMUs) and I/O units (IOUs). Active maintenance cannot be performed on XBUs even during degraded operation involving the XBUs.

FIGURE 17-1 and FIGURE 17-2 show the mounting locations of XBUs in the cabinets of the M9000 (base cabinet), and M9000 (with the expansion cabinet), respectively.

FIGURE 17-1 XBU Mounting Locations (Front of the M9000 Base Cabinet)

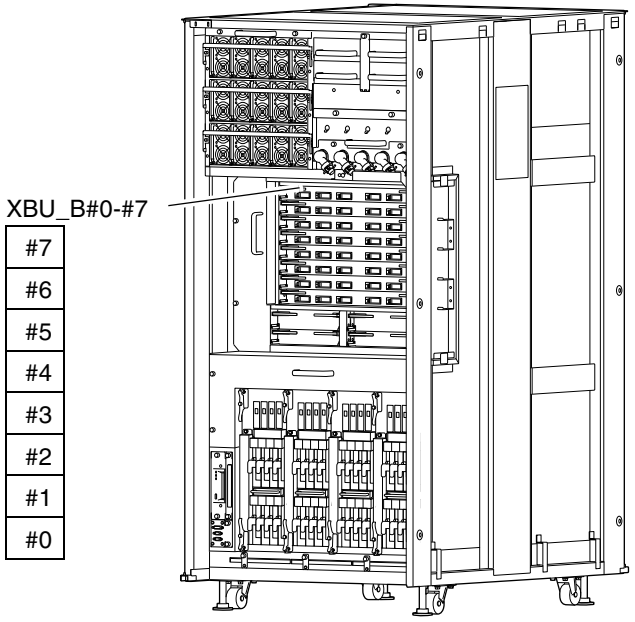


FIGURE 17-2 XBU Mounting Locations (Front of M9000 with the Expansion Cabinet)

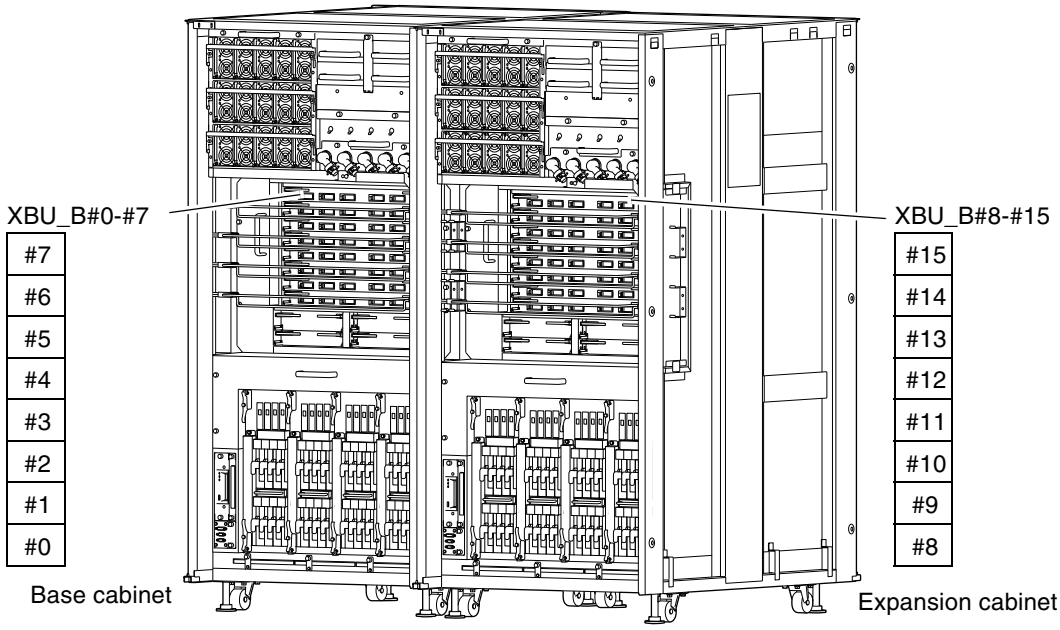


TABLE 17-1 lists the abbreviated names and numbers of the XBU.

TABLE 17-1 Abbreviated Names and Numbers of XBUs

Model name	Abbreviated names and numbers
M9000 base cabinet	XBU_B #0 to 7
M9000 expansion cabinet	XBU_B #8 to 15

17.2 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **Remove the XBU to be replaced. (See** FIGURE 17-3**)**

   a. **If the M9000 expansion cabinet is installed, slide both the top and bottom cable support brackets at the front of the replacement target crossbar unit up or down by two holes, remove the clock cables connecting the crossbar units in the base and the expansion cabinets, and then use a flathead screwdriver to remove the data cables.**

   b. **Using a Phillips screwdriver, turn the knob screws securing the left and right eject/lock levers 90 to 180 degrees to unlock the levers. (Turn the knob screw while lightly pulling the lever by one hand.)**

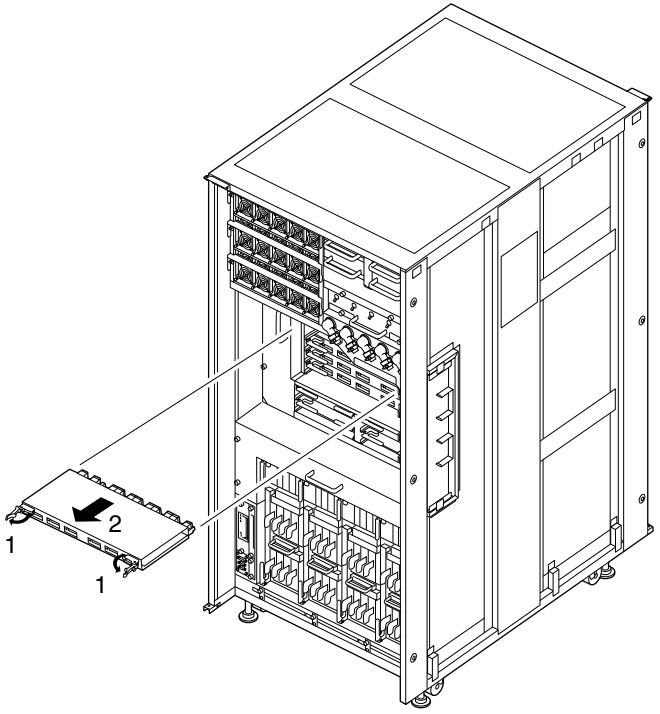
   c. **Unlock the eject/lock levers to pull the XBU off the backplane.**

   d. **While grasping the eject/lock levers, pull out the XBU slowly from the slot.**

Caution – Do not hang or yank the cable. Especially do not while the one side is connected.

Caution – Tighten or remove the cable screws evenly on both sides.

FIGURE 17-3 Removing the XBU (Front of the M9000 Base Cabinet)



9. **Place the removed crossbar unit on an antistatic mat, and then install the replacement crossbar unit.**
10. **While grasping the eject/lock levers, properly align the crossbar unit with the slot guide, and then gently insert it.**

Caution – If you are unable to obtain a torque screwdriver, finger tighten the clock cable connectors. Do not secure them with a regular screwdriver.

Caution – Do not forcibly push the crossbar unit in when inserting it. If the crossbar unit is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

11. **Lock the eject/lock levers to affix the crossbar unit to the back plane.**

12. **Push the eject/lock levers as far as they will go, and then push the knob screws on the right and left eject/lock levers to lock them in position. If the knob screws remain in position, the crossbar unit is securely mounted.**

13. **If a SPARC Enterprise M9000 server expansion cabinet is installed, connect cables for connecting the base cabinet to the expansion cabinet crossbar unit.**

    a. **To connect the cables, hold the cable connector covers and insert the connectors perpendicularly with respect to the front plate of the XB unit until they come into contact with the front plate.**

    b. **Then, while ensuring that the cable weight does not cause the cable connectors to become slanted, fix the data cable connectors in position with a standard screwdriver while supporting the cable connector with one hand.**

    c. **Use a torque screwdriver to secure the clock cable connector with the torque of 0.2N*m (2.0kgf*cm).**

Note – After fixing the cable connectors in position, confirm that the connector housing is securely affixed to the XB unit, and that it is not slanted sideways, upward or downward. If the cable connectors are affixed slanted, the affixed part will become unstable, leading to communication failure.

Caution – Do not hang or yank the cable. Especially do not while the one side is connected.

Caution – Tighten or remove the cable screws evenly on both sides.

Caution – If you are unable to obtain a torque screwdriver, finger tighten the clock cable connectors. Do not secure them with a regular screwdriver.

Caution – Do not secure the clock cables to the cable folder along with the data cables, and lay the clock cables on the data cables.

---

14. **Return the top and bottom cable support brackets (in front of the replacement crossbar unit) to their original positions in their respective upper and lower holes to securely affix them.**

Note – Visually check from the opening in the upper cover to ensure that the two printed circuit boards do not come into contact with the cable.

---

15. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

16. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

17. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

18. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement XBU, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

19. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

20. **Close the door on the server, and lock it.**

CHAPTER 18

AC Section Replacement

This chapter explains the replacement procedures for AC sections (ACSs). It covers the following:

- Section 18.1, "Overview of ACSs" on page 18-1
- Section 18.2, "Cold Replacement" on page 18-5

As a replacement method for ACSs, only the cold replacement method can be used for the sensor units. For the definition of the replacement method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

On the rack-mountable dual power feed option and power cabinet (see Chapter 24), the replacement procedure differs partially depending on the mounted AC section. For details on types of AC section, see B.17.

- The same replacement procedure is used for all single-phase AC sections (ACS_A, ACS_B, and ACS_C). See the replacement procedure for the AC section for the SPARC Enterprise M8000 server or SPARC Enterprise M9000 server.
- The replacement procedure used for the AC section for the dual power feed option (ACS_D) is the same as for the single-phase AC section, except for the fact that the ACS_D does not include a power cord. See the replacement procedure for the AC section for the SPARC Enterprise M8000 server or SPARC Enterprise M9000 server.
- The connector part of the power cable for the three-phase AC sections (ACSTPH_A, ACSTPH_B, ACSTPH_C, and ACSTPH_D) is a bolt pin. See the replacement procedure for the three-phase AC section.

18.1 Overview of ACSs

This section provides an overview of ACSs and shows their mounting locations.

An ACS distributes AC input power from external sources to power supply units (PSUs). If the dual power feed option is not installed, a main line switch is mounted in an ACS. An ACS can be duplicated, but active replacement cannot be performed even in such a case.

FIGURE 18-1, FIGURE 18-2, and FIGURE 18-3 show the mounting locations of CMUs.

FIGURE 18-1 ACSs Mounting Locations (Rear of the M8000)

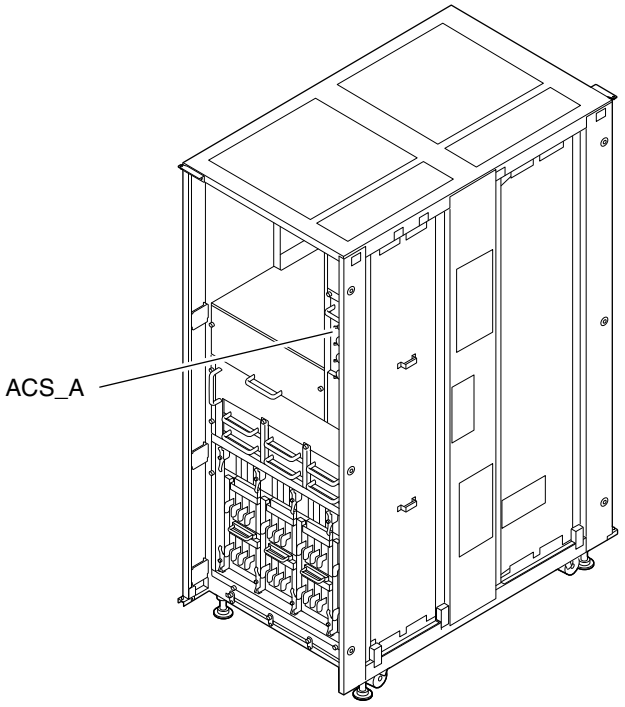


FIGURE 18-2 ACS Mounting Location (Front of the M9000 Base Cabinet)

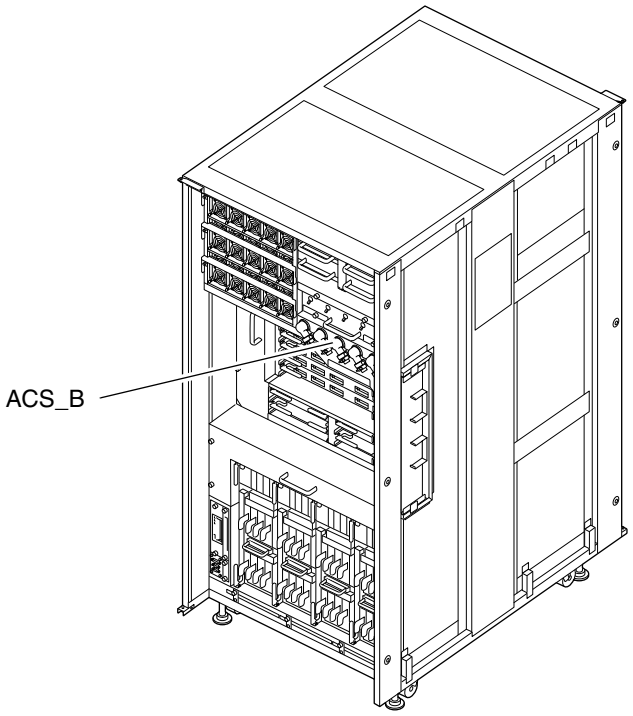


FIGURE 18-3 ACS Mounting Locations (Front of M9000 with the Expansion Cabinet)

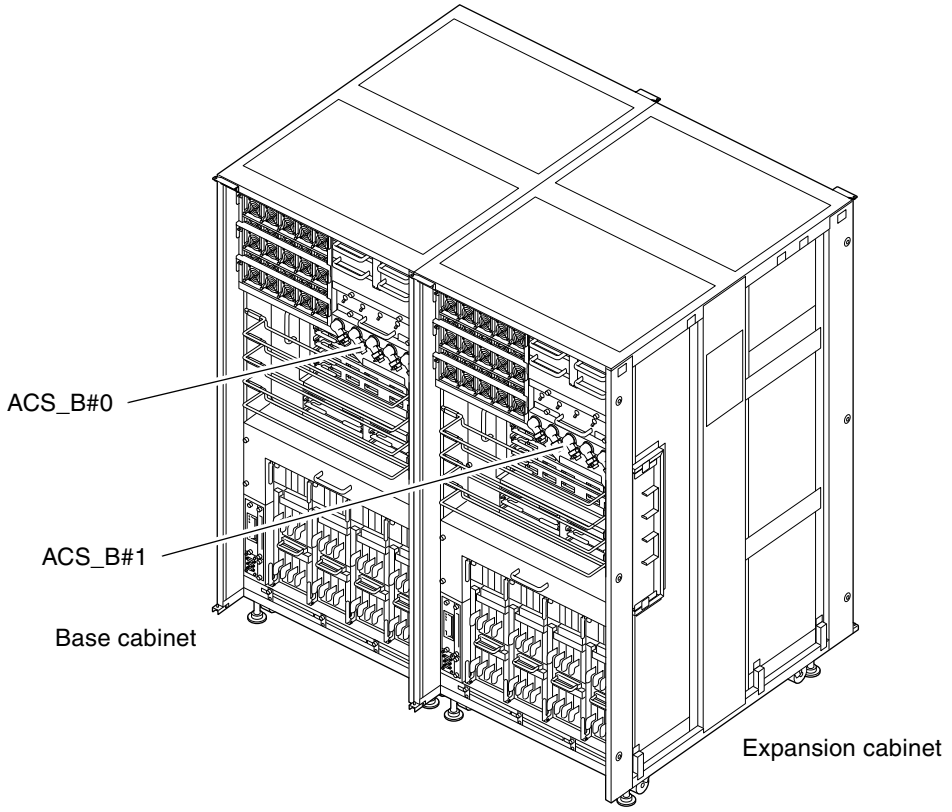


TABLE 18-1 lists the abbreviated names and component numbers of the ACSs.

TABLE 18-1 Abbreviated Names and Numbers of ACSs

Model name	Abbreviated names and numbers
M8000	ACS_A
M9000 with the base cabinet	ACS_B
M9000 with the expansion cabinet (base cabinet side)	ACS_B#0
M9000 with the expansion cabinet (expansion cabinet side)	ACS_B#1

18.2 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, “Main Line Switch Locations” on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Remove the ACS to be replaced. This section explains the ACS used for single-phase power feed in the standard configuration.**

   M8000 (See FIGURE 18-4):

   a. **Using a Phillips screwdriver, loosen the thumb screw to remove the connector protecting plate.**

   b. **Loosen the connector retaining screws to disconnect three power cords.**

   c. **Using a Phillips screwdriver, loosen the two thumb screws in the upper part of the ACS.**

      Pull up the two levers to the open position.

   d. **Move the eject lever left to the open position.**

   e. **While grasping the handle, pull out the ACS carefully from the slot.**

   M9000 (See FIGURE 18-5):

a. **Loosen the cable support plate retaining screw, and remove the plate by sliding it to the left.**

b. **Using a Phillips screwdriver, loosen the two thumb screws to remove the connector protecting plate.**

c. **Using a Phillips screwdriver, loosen the connector retaining screws to disconnect five power cords.**

d. **Move the eject lever up to the open position.**

e. **Using a Phillips screwdriver, loosen the two thumb screws in the upper part of the ACS.**

   Pull up the two levers to the open position.

f. **While grasping the handle, pull out the ACS carefully from the slot.**

For three-phase AC section:

a. **Unlock and open the door of the power cabinet.**

b. **Loosen the four screws on the ACS cover, and remove the ACS cover. (See** FIGURE 18-6**)**

c. **Remove the power cables.**

Caution – When removing power cables, switch off the main line switches. The power cord must be removed by a qualified worker. Ask a system administrator.

d. **Loosen the knob screws on the AC section, and pull out the AC section while lifting the two levers.**

e. **With the AC section pulled out partially, grasp the front and top handles and remove the AC section.**

FIGURE 18-4 Removing the AC Section (Rear of the M8000)

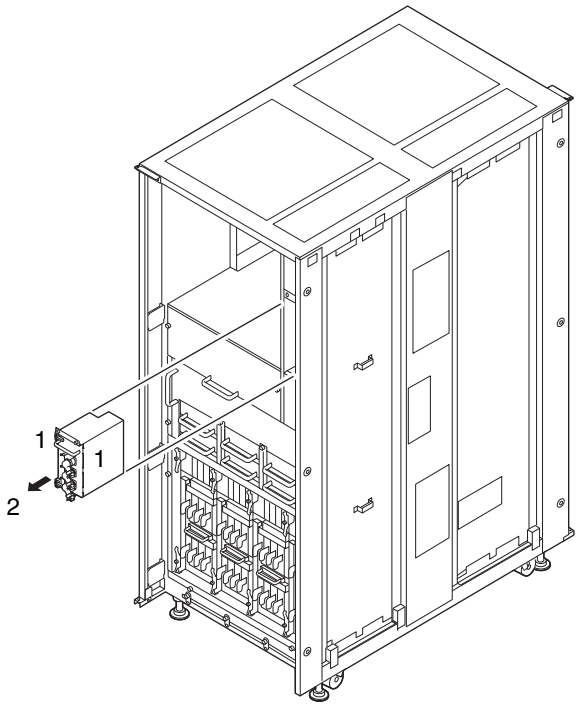


FIGURE 18-5 Removing the AC Section (Front of the M9000)

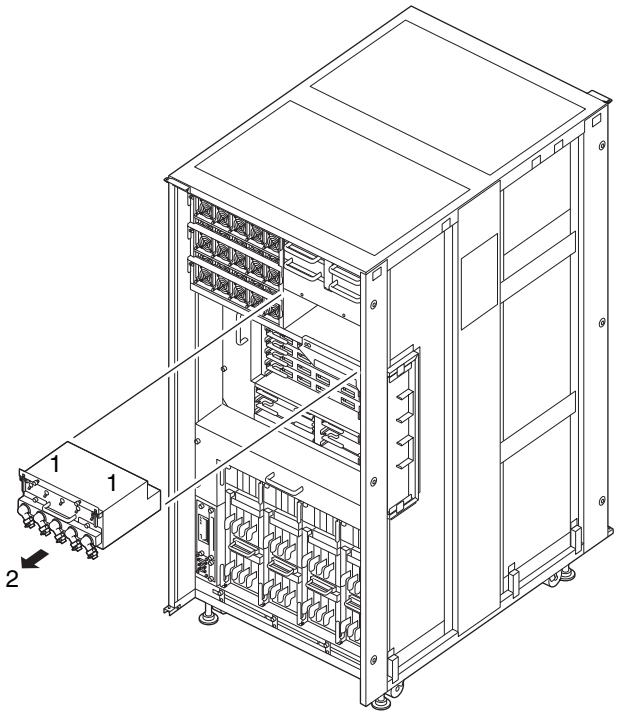
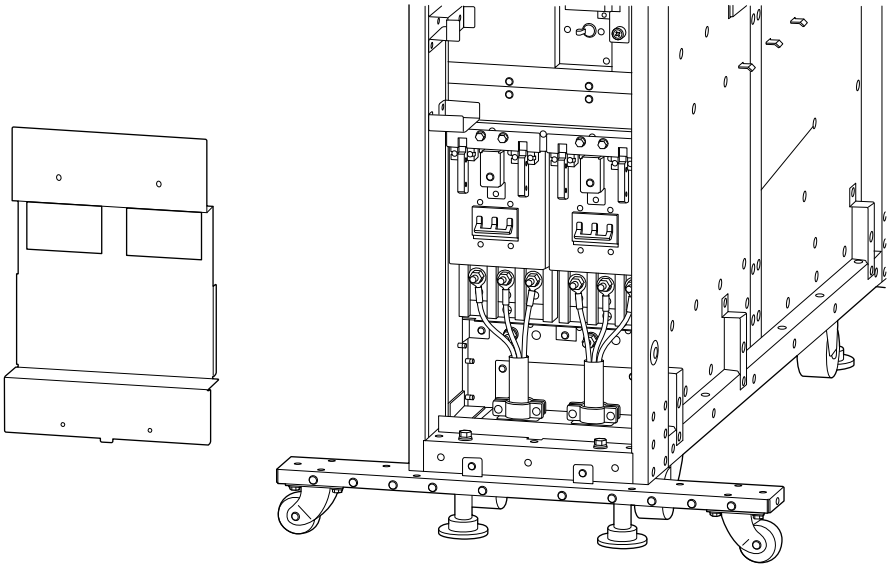


FIGURE 18-6 Removing the Three-phase AC Section (Power Cabinet)



9. **Place the removed AC section on an antistatic mat.**

10. **Mount the replacement AC section by following the removal instructions in** Step 8 **in reverse order. Align the AC section with the slot guides, insert it carefully, press the lever to the closed position, and secure it firmly.**

Caution – Do not forcibly push the ACS when inserting it, even if it is not moving smoothly. If the ACS is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

11. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

12. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

13. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

14. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement ACS, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

15. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

16. **Close the door on the server, and lock it.**

CHAPTER 19

DDC Replacement

This chapter explains the replacement procedures for DDCs (DC-to-DC Converters). It covers the following:

- Section 19.1, "Overview of the DDC" on page 19-1
- Section 19.2, "Active Replacement and Hot Replacement" on page 19-3
- Section 19.3, "Cold Replacement" on page 19-7

There are three methods for replacing DDCs: active replacement, hot replacement and cold replacement. For the definition of the replacement method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

19.1 Overview of the DDC

This section provides an overview of the DDCs that are mounted on the back plane of the M8000 (BP_A), and describes their mounting locations.

A DDC supplies power to the back plane. DDCs are duplicated, and active maintenance can be performed on them.

FIGURE 19-1 indicates the DDC mounting location in the M8000.

FIGURE 19-1 Mounting Locations of the DDCs (Front of the M8000)

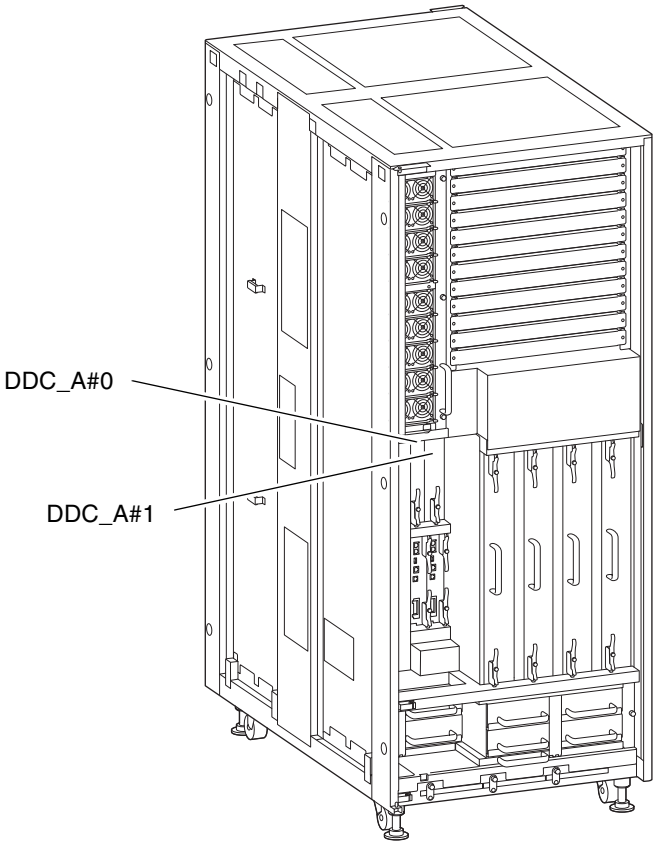


TABLE 19-1 lists the abbreviated names and numbers of the DDCs.

TABLE 19-1 Abbreviated Names and Numbers of DDCs

Model name	Abbreviated names and numbers
M8000	DDC_A#0, 1

19.2 Active Replacement and Hot Replacement

The active replacement procedure and hot replacement procedure for the DDC are the same.

The procedure is as follows.

1. **Unlock and open the appropriate door of the server.**

   For details, see Chapter 5**.**

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Using the maintenance menu, select the DDC to be replaced. (Use the maintenance menu for** Step 8**.)**

   The fieldeng permission is required for executing this command.

   a. **Log in to the XSCF from the terminal connected to the XSCF, and execute the** `replacefru` **command.**

      The initial page of the maintenance menu is displayed as shown in FIGURE 19-2.

FIGURE 19-2 Initial Page of the Maintenance Menu

```
--------------------------------------------------
Maintenance/Replacement Menu
Please select a type of FRU to be replaced.

1. CMU/IOU(CPU Memory Board Unit/IO Unit)
2. FAN(Fan Unit)
3. PSU(Power Supply Unit)
4. XSCFU(Extended System Control Facility Unit)
5. DDC_A(DDC for BP_A)
--------------------------------------------------
Select [1-5|c:cancel] :
```

Note – DDC_A is displayed only for the M8000.

   b. **Select "5. DDC" from the replacement parts list in the maintenance menu.**

c. **From here, perform operations according to the guidance displayed in the maintenance menu.**

   Check the states of LEDs (POWER LED: off; CHECK LED: blinking) on the DDC to be replaced, and begin the actual replacement work when a message instructing the user to replace the target DDC is displayed. Leave the maintenance menu as is until Step 7.

3. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

4. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

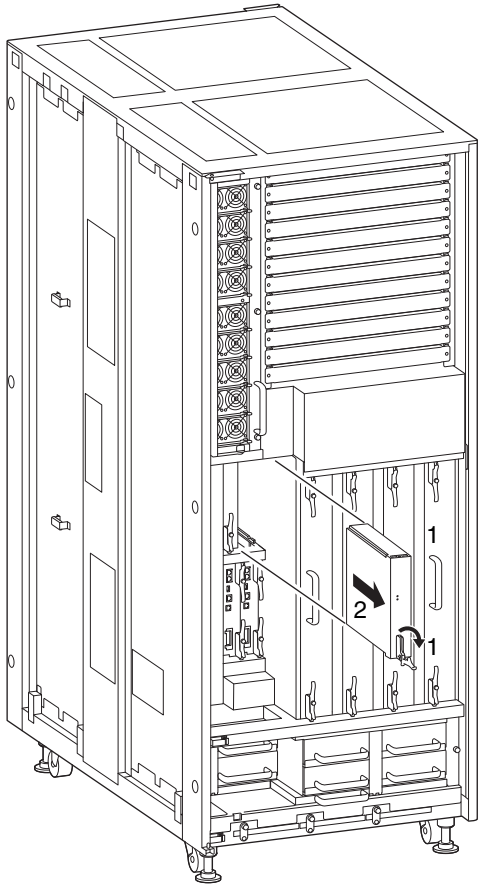
5. **Remove the DDC to be replaced.**

   a. **Using a Phillips screwdriver, turn the knob screw securing the bottom eject/lock lever 90 to 180 degrees to unlock the lever. (Turn the knob screw while lightly pulling the lever with one hand.)**

   b. **Unlock the eject/lock levers to pull the DDC off the backplane.**

   c. **While grasping the eject/lock levers, pull out the DDC slowly from the slot.**

FIGURE 19-3 Removing the DDC (Front of the M8000)



6. **Place the removed DDC on an antistatic mat.**

7. **Mount the replacement DDC by following the removal instructions in Step 5 and Step 6 in reverse order. Align the DDC with the slot guides, insert it carefully, and secure it firmly.**

   Push the bottom eject/lock lever as far as it will go, and then push the knob screw on the lever to lock it in position. If the knob screws remain in position, the DDC is securely mounted.

Caution – Do not forcibly push the DDC when inserting it, even if it is not moving smoothly. If the DDC is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

8. **Go back to the terminal that is connected to the XSCF, and enter data according to the guidance of the maintenance menu displayed after replacement.**

   a. **Perform this operation according to instructions in messages. The operation is completed when the display of the maintenance menu returns to the initial page.**

   b. **Exit the maintenance menu.**

9. **Using the XSCF command `showhardconf` or `showstatus`, confirm that each replacement component is normal.**

   Unless "*" is displayed for the replacement DDC, it is operating normally.

   For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

10. **Close and lock the door of the server.**

19.3 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5**.**

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Caution – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Remove the DDC to be replaced. (See** FIGURE 19-3**)**

   a. **Using a Phillips screwdriver, turn the knob screw securing the bottom eject/lock lever 90 to 180 degrees to unlock the lever. (Turn the knob screw while lightly pulling the lever with one hand.)**

   b. **Unlock the eject/lock levers to pull the DDC off the backplane.**

   c. **While grasping the eject/lock levers, pull out the DDC slowly from the slot.**

9. **Place the removed DDC on an antistatic mat.**

10. **Mount the replacement DDC by following the removal instructions in** Step 8 **in reverse order. Align the DDC with the slot guides, insert it carefully, and secure it firmly.**

    Push the eject/lock levers as far as they will go, and then push the knob screws on the right and left eject/lock levers to lock them in position. If the knob screws remain in position, the DDC is securely mounted.

Caution – Do not forcibly push the DDC when inserting it, even if it is not moving smoothly. If the DDC is forcibly inserted despite the presence of any obstruction in a slot or any problem with a connector pin, serious damage may result.

11. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

12. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

13. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

14. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is not displayed for the replacement ACS, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

15. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

16. **Close the door on the server, and lock it.**

CHAPTER 20

Backplane Replacement

This chapter explains the replacement procedure for backplanes (BPs). It covers the following:

- Section 20.1, "Overview of the BP" on page 20-1
- Section 20.2, "Cold Replacement" on page 20-1

As a replacement method for BPs, only the cold replacement method can be used. For the definition of the replacement method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

20.1 Overview of the BP

This section provides an overview of the BPs and shows their mounting locations.

A BP has connectors for interconnecting replaceable units in a cabinet. The following BPs are available:

- BP_A: used for interconnecting the CMUs and IOUs of the M8000
- BP_B: used for interconnecting the CMUs, IOUs, XBUs of the M9000
- PSUBP: used for interconnecting power supply units (PSUs)
- FANBP: used for interconnecting FAN units

20.2 Cold Replacement

BPs are mounted in a cabinet, and it is necessary to remove many other components before it can be accessed. Consequently, active maintenance cannot be performed on BPs. Cold replacement must be used when replacing them.

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

20.2.1 M8000/M9000 BPs

FIGURE 20-1, FIGURE 20-2, and FIGURE 20-3 show the mounting locations of BPs of M8000, BP for M9000 (base cabinet), and M9000 (with the expansion cabinet), respectively.

FIGURE 20-1 BP Mounting Locations (Rear of the M8000)

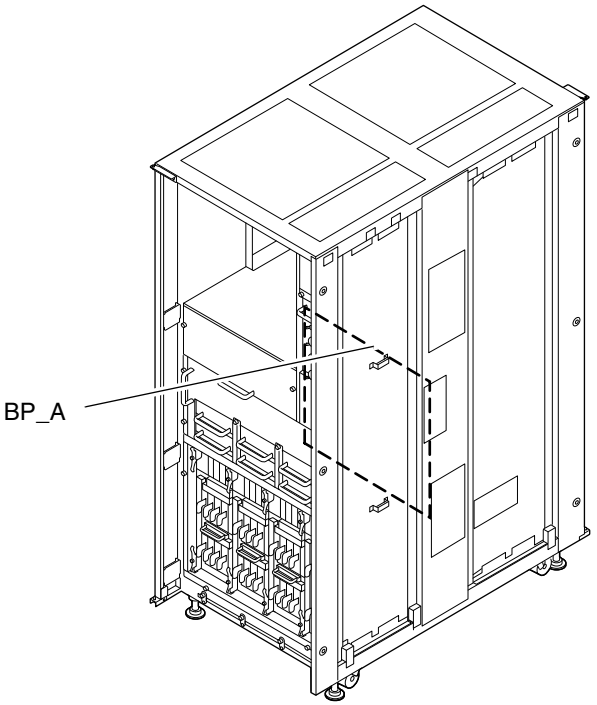


FIGURE 20-2 BP Mounting Locations (Front of the M9000 Base Cabinet)

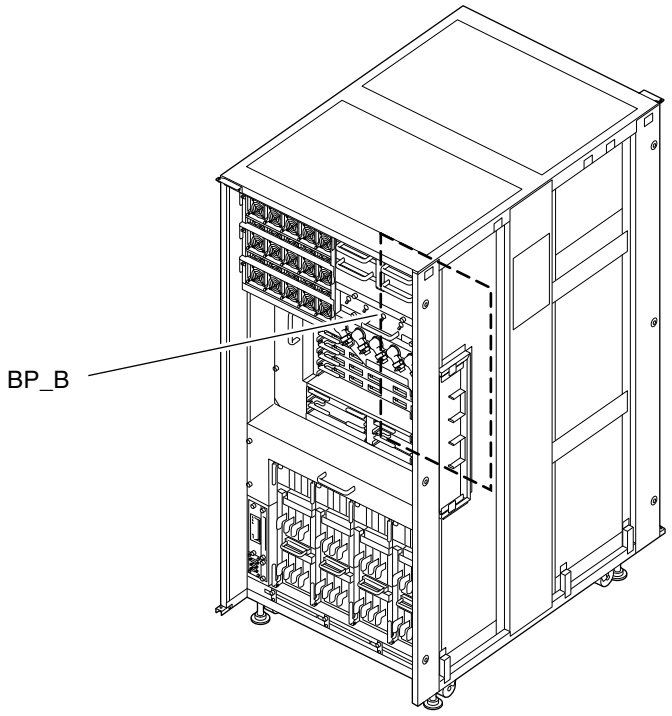


FIGURE 20-3 BP Mounting Locations (Front of M9000 with the Expansion Cabinet)

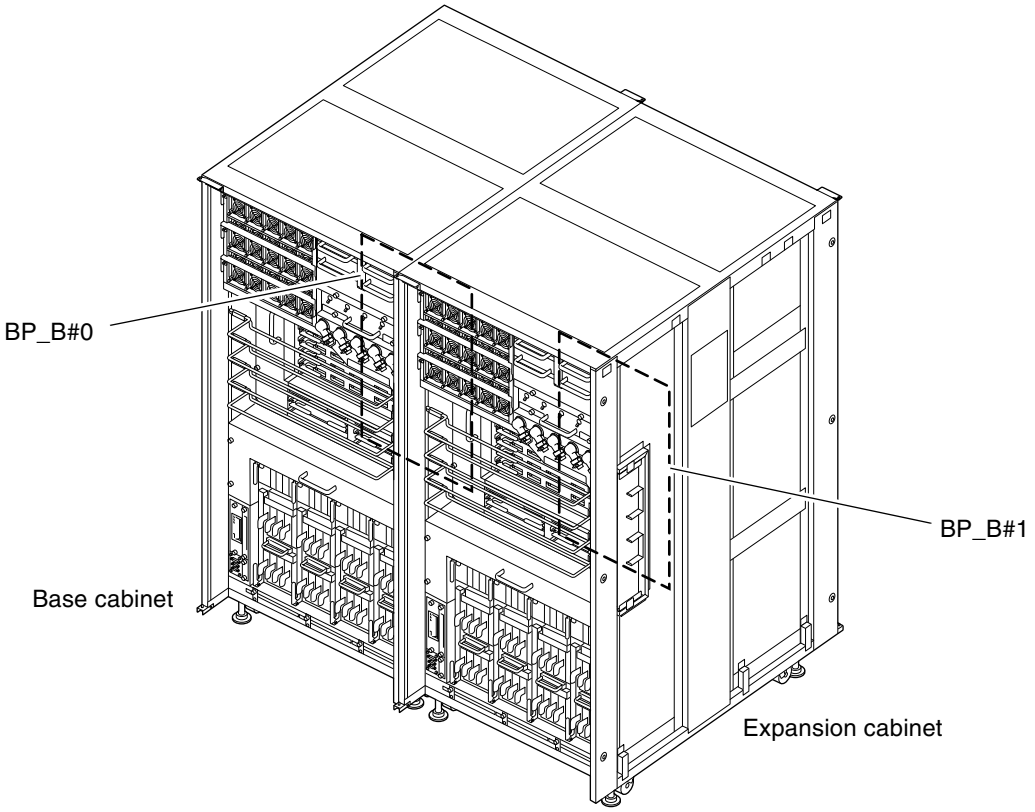


TABLE 20-1 lists the abbreviated names and numbers of the BPs.

TABLE 20-1 Abbreviated Names and Numbers of BPs

Model name	Abbreviated names and numbers
M8000	BP_A
M9000 with the base cabinet	BP_B
M9000 with the expansion cabinet (base cabinet side)	BP_B#0
M9000 with the expansion cabinet (expansion cabinet side)	BP_B#1

The cold replacement procedure is as follows:

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   For details on how to log in to the XSCF, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*. Domain administrator authority is required for executing this command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   The XSCF STANDBY LED (green) on the operator panel goes out.

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Release the following components from the BP to be replaced or remove them completely from the cabinet so that you can access the BP.**

- M8000 (See FIGURE 20-6):

  Perform the following operations from the front of the unit:

  a. Release all mounted CMUs from the BP. (See Chapter 6**)**

  b. Pull two DDCs off the BP. (See Chapter 19**)**

  c. Pull two XSCF units off the BP. (See Chapter 11**)**

Perform the following operations from the rear of the unit (See FIGURE 20-4):

a. Remove the grounding wire on one side at the top of the rear door so that the door can be opened at least 180 degrees.

b. Remove all FAN units on the I/O unit. (See Chapter 8) Mount the fixing brackets of the FAN unit at their original locations, and secure them temporarily.

c. Using a Phillips screwdriver, loosen the two thumb screws securing the duct on the fan shelf. While grasping the handle, remove the duct.

d. Using a Phillips screwdriver, loosen the four thumb screws on the left and right sides of the fan shelf.

e. While grasping the handle of the fan shelf, pull it out partially. Move your hands to the indentations on the both sides of the fan shelf, and then pull out the fan shelf carefully from the cabinet.

f. Remove all mounted I/O units (IOUs) including filler panels. (See Chapter 7)

g. Using a Phillips screwdriver, loosen the two knob screws on both sides of the IOU shelf and the two screws on the innermost part of the shelf.

h. While grasping the frame of the IOU shelf, carefully pull out the IOU shelf partially, then switch to grasping the shelf by the indentations on its side, and remove it from the cabinet.

i. Using a Phillips screwdriver, loosen the two retaining screws of the L-shaped box on the left side in the cabinet to remove the box.

j. Using a Phillips screwdriver, loosen the retaining screws on the left and right sides to remove the horizontal IOU-fan connector panel on the far side in the cabinet. Disconnect the cables as well. Also remove the connector on the right side.

- M9000 (See FIGURE 20-7):

Perform the following operations from the rear of the unit:

a. **Pull all mounted CMUs off the BP. (See Chapter 6)**

b. **Pull all mounted I/O units (IOUs) off the BP. (See Chapter 7)**

Perform the following operations from the front of the unit (See FIGURE 20-5):

a. **Remove all mounted crossbar units (XBUs).**

For a model with the expansion cabinet, remove all cables and cable support brackets as well. Disconnect the cables completely from both cabinets. (See Chapter 17)

b. **Remove two clock control units (CLKUs).**

For a model with the expansion cabinet, disconnect the cables as well. Disconnect the cables completely from both cabinets. (See Chapter 11)

c. **Remove two XSCF units.**

For a model with the expansion cabinet, disconnect the cables as well. Disconnect the cables completely from both cabinets. (See Chapter 17)

d. **Loosen the four screws securing the XBU shelf. While grasping the handle, remove the shelf from the cabinet.**

e. **Remove all mounted I/O units (IOUs) including filler panels. (See Chapter 7)**

f. **Loosen the four screws securing the IOU shelf. While grasping the handle, pull the shelf out partially. Then, move your hands to the top frame of the IOU shelf, and remove the shelf from the cabinet.**

FIGURE 20-4 Preparation for Accessing BP_A (Rear of the M8000)

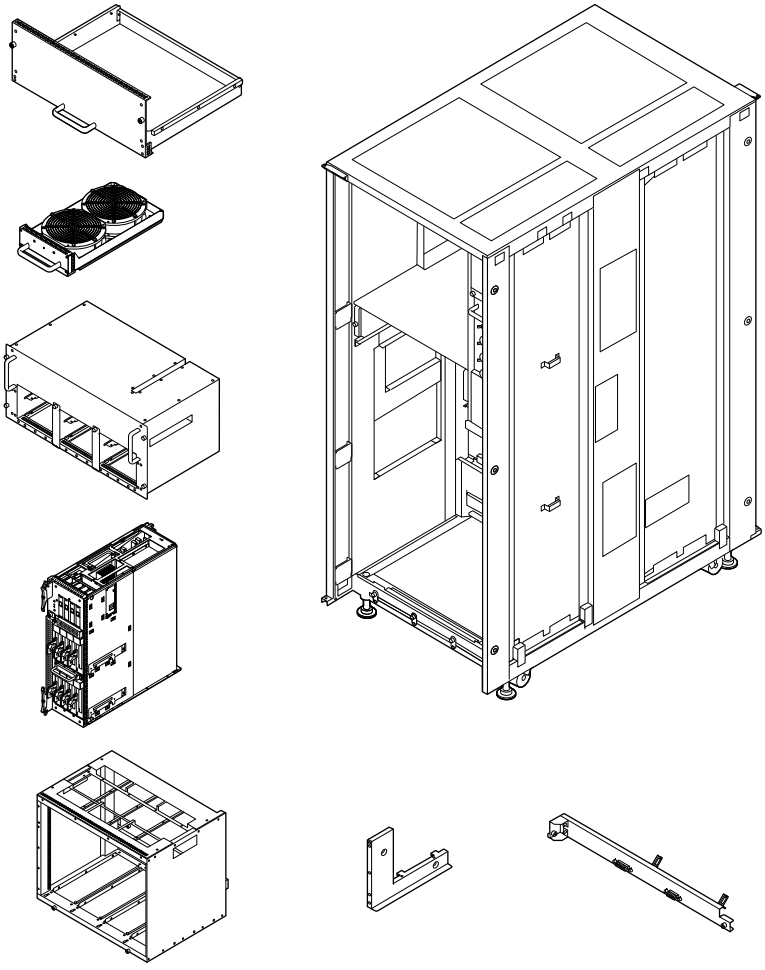
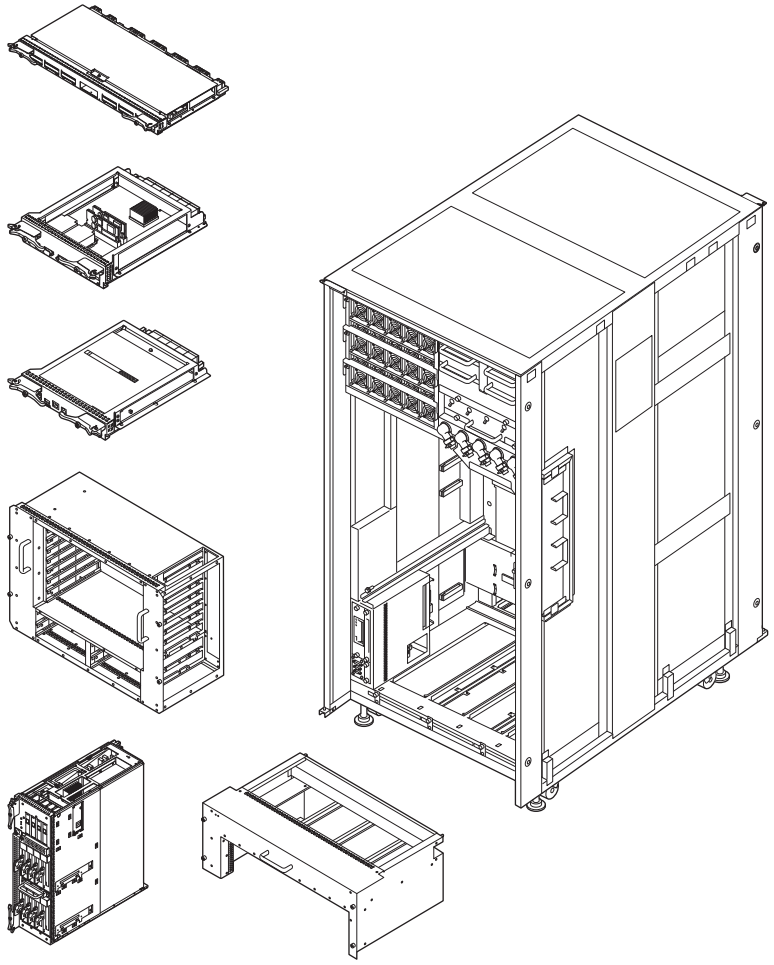


FIGURE 20-5 Preparation for Accessing BP_B (Front of M9000)



9. **Remove the BP to be replaced.**

- M8000 (See FIGURE 20-6):

   a. **Using a torque wrench (box driver size: M6), remove the four bolts that hold the part shaped like an inverted L at the top edge of the bus bar of the BP.**

   b. **While grasping the lock of the connector, remove every cable connected to the BP.**

Note – Be sure to press both lock release buttons inward and pull the connector when removing the SAS cables (lock release buttons of the connector are yellow).

---

c. **Arrange the cables so that the connectors do not get caught in anything while the BP is being removed.**

d. **Using a Phillips screwdriver, loosen the eight thumb screws securing the BP.**

   The BP does not fall because it is suspended from the two guide rails inside the upper part of the cabinet.

e. **While grasping the two handles of the BP, remove the BP by moving it carefully along the guide rails.**

- M9000 (See FIGURE 20-7):

a. **Using a torque wrench, remove the four hexagonal bolts on the bus bar of the BP.**

b. **With the connectors unlocked, disconnect all cables from the BP.**

Note – Be sure to press both lock release buttons inward and pull the connector when removing the SAS cables (lock release buttons of the connector are yellow).

---

c. **Arrange the cables so that the connectors do not get caught on anything while the BP is being removed.**

d. **Using a Phillips screwdriver, loosen the six thumb screws securing the BP.**

   The BP does not fall because it is mounted on the two guide rails inside the lower part of the cabinet.

e. **While grasping the upper parts of the BP frame, lower it toward you, and place it horizontally on the guide rails.**

f. **While grasping the left and right sides of the BP frame, remove the BP by moving it carefully along the guide rails.**

FIGURE 20-6 Removing the BP (Rear of the M8000)

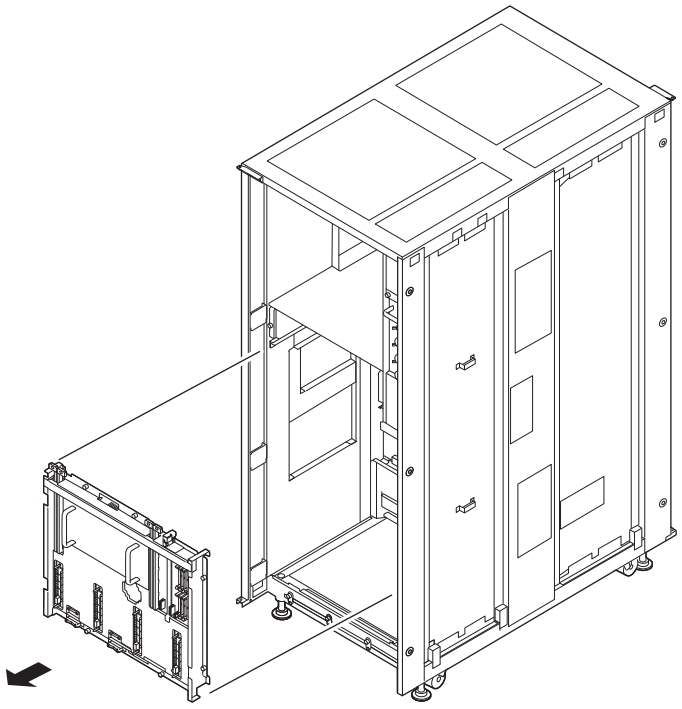
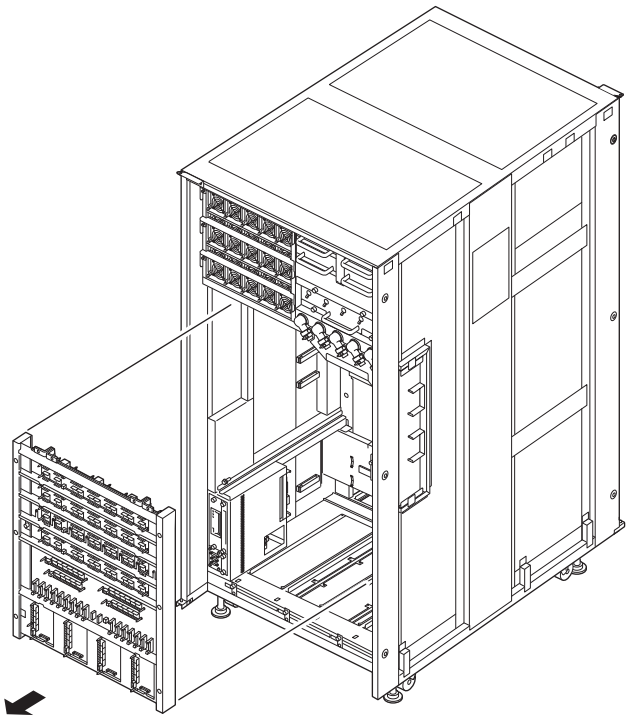


FIGURE 20-7 Removing the BP (Front of the M9000)



10. **Place the removed BP on an antistatic mat.**

11. **Mount the replacement BP by following the removal instructions in** Step 8 **and** Step 9 **in reverse order.**

Caution – For tightening the bus bar, choose a torque depending on the bolt size.
* For M8 bolts, use a torque of 8.24 N*m (84 kgf*cm).
* For M6 bolts, use a torque of 3.73 N*m (38 kgf*cm).

Caution – Remove the cover which is attached for shipment. Be sure not to hit connector parts of the BP against anything. Otherwise, the connection pins may be seriously damaged.

Caution – Be sure not to hit the connector parts on anything when mounting the fan shelf. The connector on the edge of the base plate of the switch BP is not used to connect the cable of the BP of the M8000. Be aware of this when connecting cables.

---

12. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

13. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

14. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    Domain administrator authority is required for executing this command.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

15. **Return the mode switch on the operator panel to its original position.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

16. **Using the XSCF command `showhardconf` or `showstatus`, confirm that each replacement component is normal.**

    Unless "*" is displayed for the replacement BP_A or BP_B, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

17. **Close the door on the server, and lock it.**

20.2.2 PSU BP

FIGURE 20-8, FIGURE 20-9, and FIGURE 20-10 show the mounting locations of PSUBPs of M8000, M9000 (base cabinet), and M9000 (with the expansion cabinet), respectively.

FIGURE 20-8 PSUBP Mounting Locations (Front of the M8000)

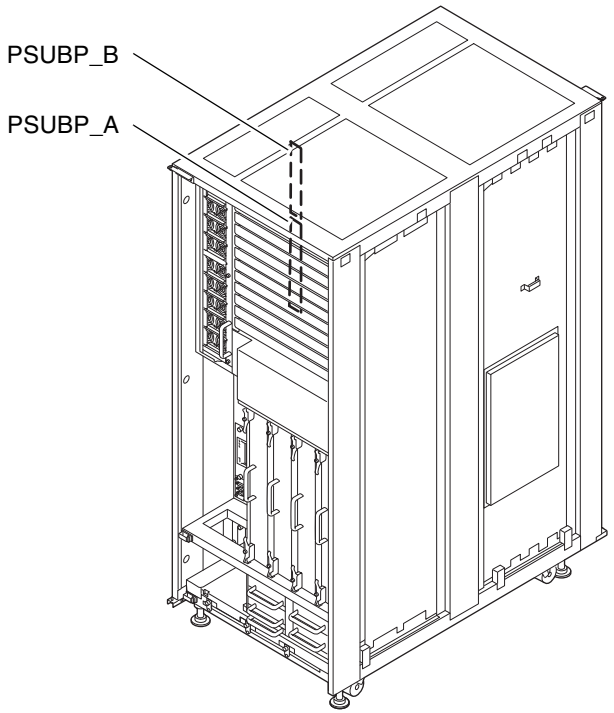


FIGURE 20-9 PSUBP Mounting Locations (Front of the M9000 Base Cabinet)

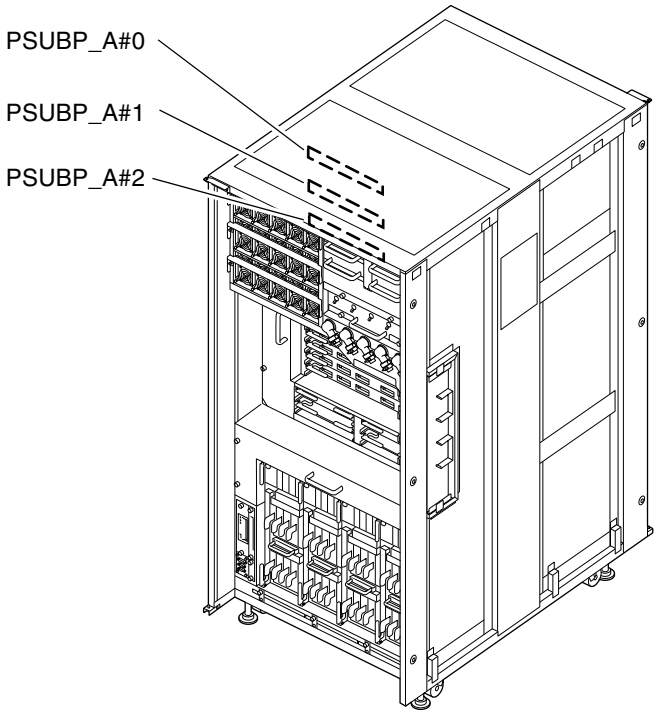


FIGURE 20-10 PSUBP Mounting Locations (Front of M9000 with the Expansion Cabinet)

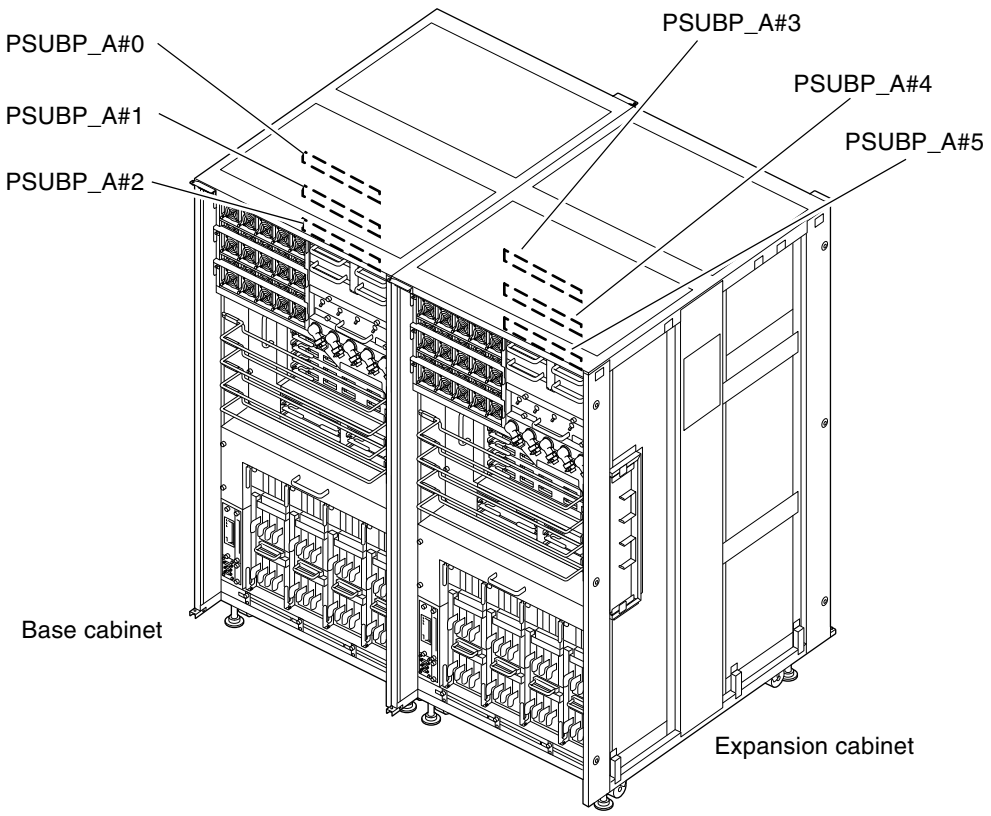


TABLE 20-2 lists the abbreviated names and component numbers of the PSUBPs.

TABLE 20-2 Abbreviated Names and Numbers of PSU BPs

Model name	Abbreviated names and numbers
M8000	PSUBP_A and PSUBP_B
M9000 base cabinet	PSUBP_A#0 - 2
M9000 expansion cabinet	PSUBP_A#3 - 5

The cold replacement procedure is as follows:

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **Remove following components so that you can access the PSU BP to be replaced.**

- M8000 (See FIGURE 20-11):

  a. **Remove all nine PSUs. (See** Chapter 9**)**

  b. **Return the fixing brackets of the PSU at their original locations, and secure them with screws temporarily.**

  c. **Using a Phillips screwdriver, loosen the three thumb screws on the right side of the PSU shelf.**

  d. **While grasping the handle on the lower right side of the PSU shelf, pull out the shelf carefully.**

- M9000 (See FIGURE 20-12):

  a. **Remove all 15 PSUs. (See** Chapter 9**)**

  b. **Mount the fixing brackets of the PSU at their original locations, and secure them with screws temporarily.**

  c. **Using a Phillips screwdriver, loosen the two thumb screws in the upper part of the PSU shelf.**

  d. **While grasping the handle at the upper part of the PSU shelf, pull out the shelf carefully.**

9. **Remove the PSU backplane (PSUBP) to be replaced. Although two types of BPs are used, the replacement procedures are the same, with the only difference being the numbers of connectors they have (PSUBP_A: 5 connectors; PSUBP_B: 4 connectors).**

   a. **Using a Phillips screwdriver, loosen the two thumb screws in the PSU BP.**

   b. **Pull out the PSUBP carefully.**

FIGURE 20-11 Removing the PSUBP (Front of the M8000)

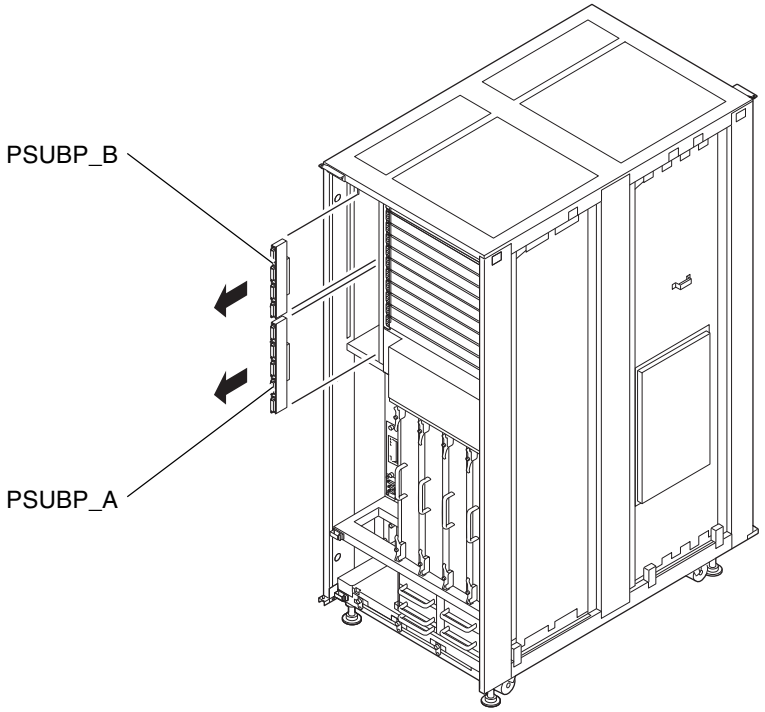
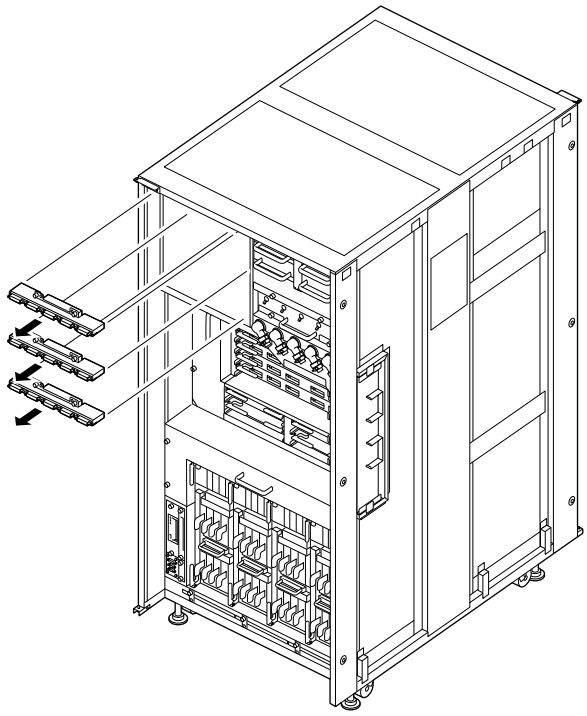


FIGURE 20-12 Removing the PSUBP (Front of the M9000)



10. **Place the removed BP on an antistatic mat.**

11. **Mount the replacement BP by following the removal instructions in** Step 8 **and** Step 9 **in reverse order. Align the holes by the side of the thumb screws of the PSUBP with the two guide pins in the cabinet.**

Note – To mount a FAN BP on a fan shelf that has a guide pin, align the FAN BP with the guide pin during mounting.

Caution – Be sure not to hit connector parts of the BP against anything. Otherwise, the connection pins may be seriously damaged.

---

12. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

13. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

14. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

15. **Restore the original mode switch setting on the operator panel.**

20.2.3 FAN BP

FIGURE 20-13, FIGURE 20-14, and FIGURE 20-15 show the mounting locations of FAN BPs of M8000, M9000 (base cabinet), and M9000 (with the expansion cabinet), respectively.

FIGURE 20-13 FANBP Mounting Locations (M8000)

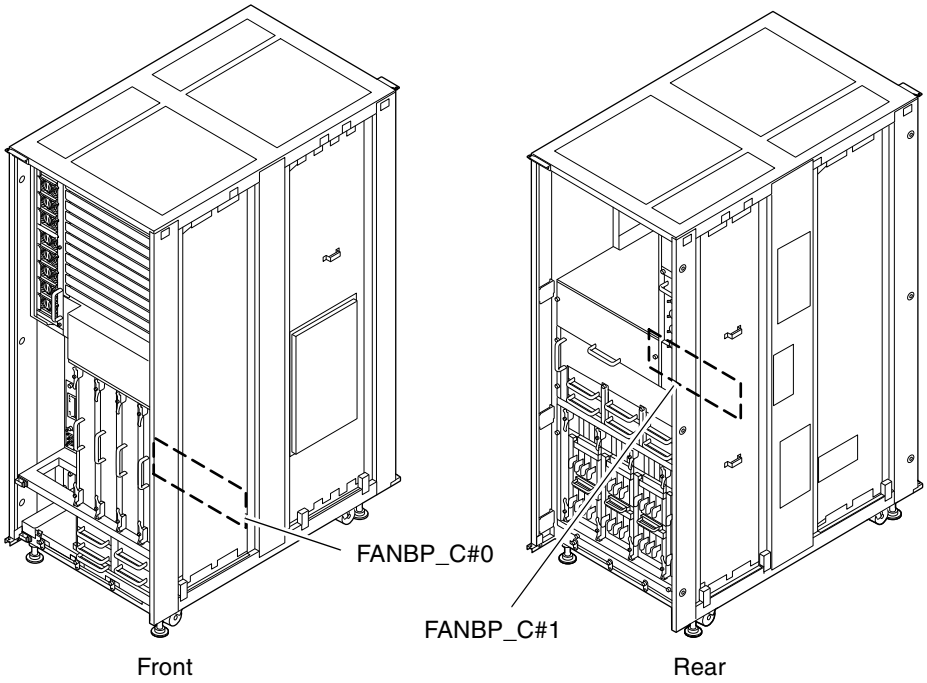


FIGURE 20-14 FANBP Mounting Locations (Rear of the M9000 Base Cabinet)

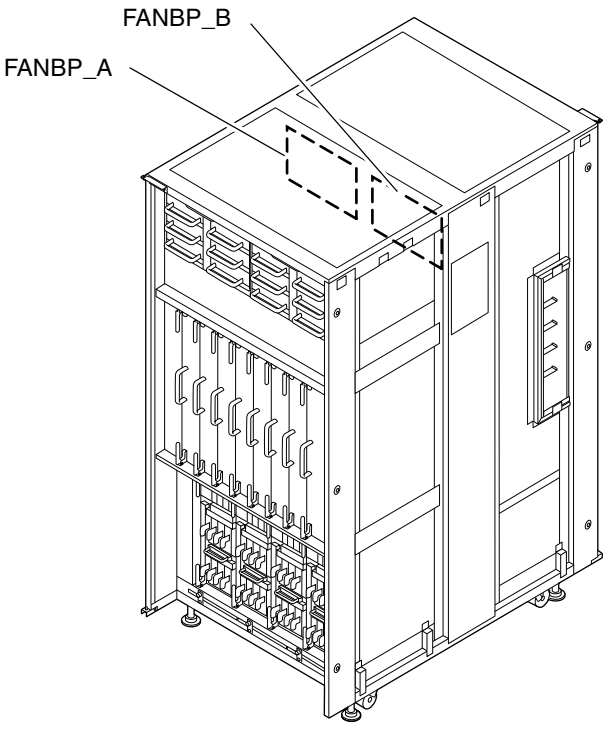


FIGURE 20-15 FANBP Mounting Locations (Rear of M9000 with the Expansion Cabinet)

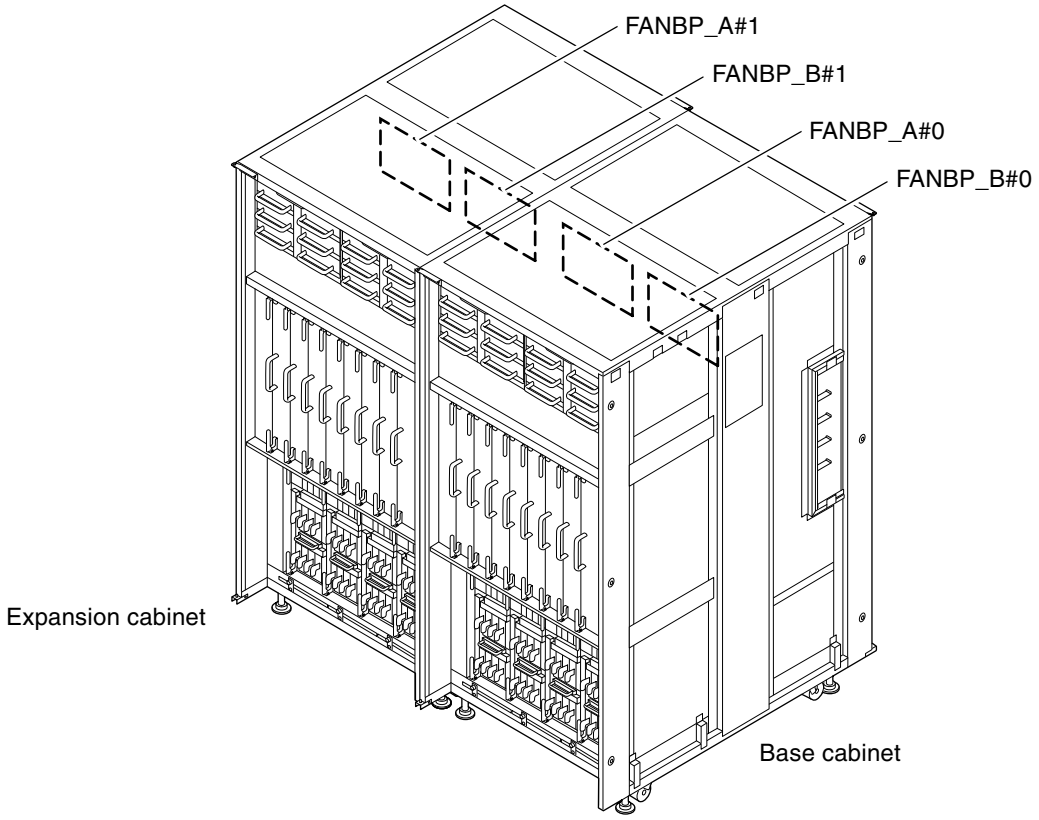


TABLE 20-3 lists the abbreviated names and component numbers of the FANBPs.

TABLE 20-3 Abbreviated Names and Component Numbers of the FANBPs

Model name	Abbreviated names and numbers
M8000	FANBP_C#0 (front), FANBP_C#1 (rear)
M9000 with the base cabinet	FANBP_A, FANBP_B
M9000 with the expansion cabinet (base cabinet side)	FANBP_A#0, FANBP_B#0
M9000 with the expansion cabinet (expansion cabinet side)	FANBP_A#1, FANBP_B#1

The cold replacement procedure is as follows:

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Caution – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**
   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **Release the following components from the FAN backplane (FANBP) to be replaced or remove them completely from the cabinet so that you can access the FANBP. The FANBP is mounted at the rear of the fan shelf.**

- M8000 (See FIGURE 20-11):

  For FANBP_C#0, perform the following operations from the front of the unit:

  a. **Remove all six FAN units. (See** Chapter 8**) After the FAN units are removed, return the fan fixing brackets at their original locations, and secure them temporarily.**

  b. **Using a Phillips screwdriver, loosen the thumb screws on the left and right sides of the fan shelf.**

  c. **While grasping the handle at the lower center of the fan shelf, pull out the fan shelf carefully.**

  For FANBP_C #1, perform the following operations from the rear of the unit:

  a. **Remove all six FAN units. (See** Chapter 8**) After the FAN units are removed, mount the fan fixing brackets at their original locations, and secure them temporarily.**

  b. **Using a Phillips screwdriver, loosen the two thumb screws on each the left and right sides of the fan shelf.**

  c. **While grasping the handles on the left and right sides of the fan shelf, pull out the shelf carefully.**

- M9000 (See FIGURE 20-12):

  For FANBP_A, perform the following operations from the front and rear of the unit:

  a. **Pull the four FAN units at the front off the BP. (See** Chapter 8**)**

  b. **Go to the rear of the unit.**

c. Remove all six FAN units on the left side. (See Chapter 8) After the FAN units are removed, mount the fan fixing brackets at their original locations, and secure them temporarily.

d. Using a Phillips screwdriver, loosen the two thumb screws in the upper part of the fan shelf.

e. While grasping the handle at the upper part of the fan shelf, pull out the shelf carefully.

For FANBP_B, perform the following operations from the rear of the unit:

a. Remove all six FAN units on the right side. (See Chapter 8)

b. Using a Phillips screwdriver, loosen the two thumb screws in the upper part of the fan shelf.

c. While grasping the handle at the upper part of the fan shelf, pull out the shelf carefully.

9. Remove the FANBP to be replaced from the fan shelf. Although three types of FANBPs and three types of fan shelves are used, the replacement procedures for the BP are the same.

a. Using a Phillips screwdriver, loosen two thumb screws on each the left and right sides of the FANBP (FANBP_A or FANBP_B in the M9000) or three thumb screws in each the upper and lower parts of the FANBP (FANBP_C in the M8000).

b. Remove the FANBP.

FIGURE 20-16 Removing the FANBP (Rear of the M8000)

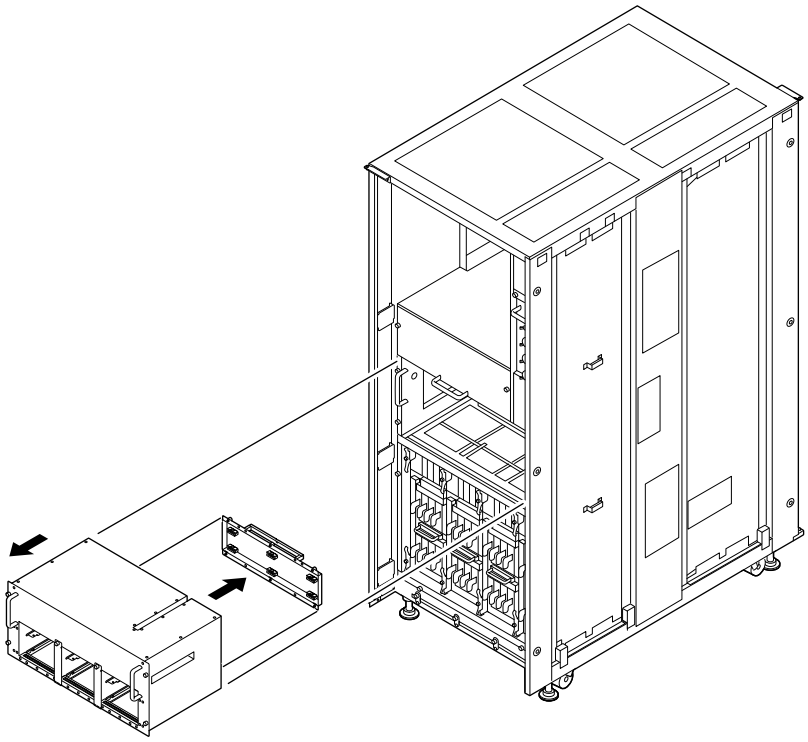


FIGURE 20-17 Removing the FANBP (Front of M8000)

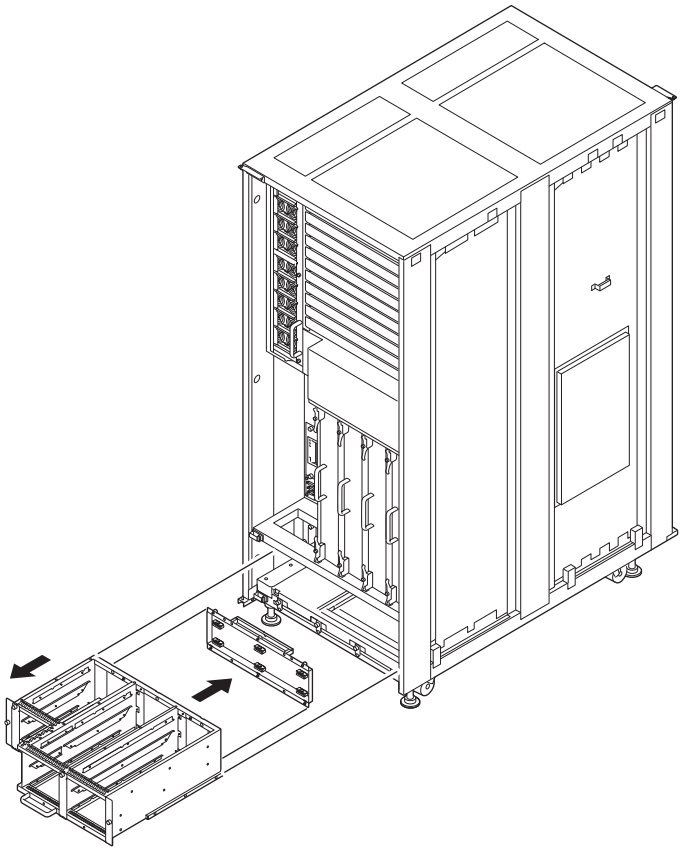
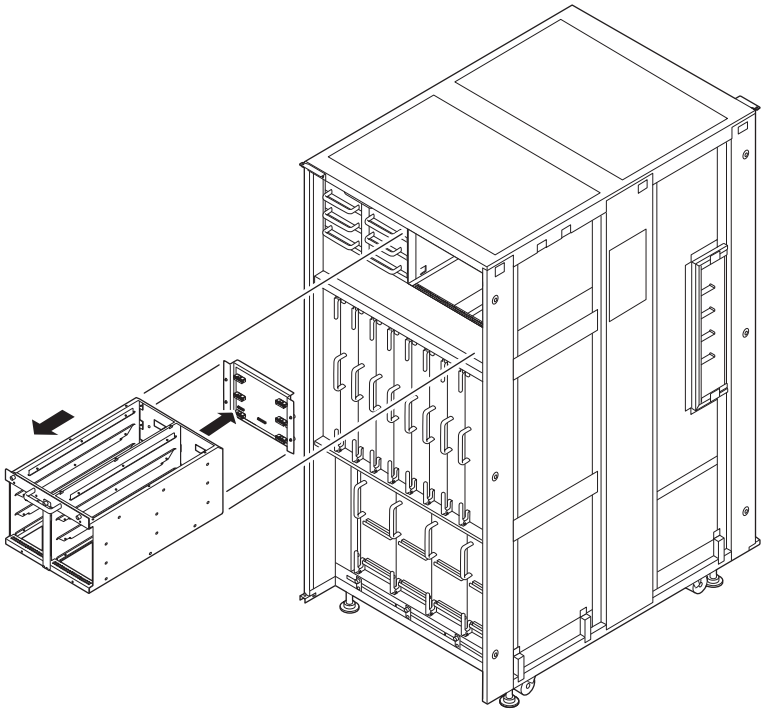


FIGURE 20-18 Removing the FANBP (Rear of M9000)



10. **Place the removed BP on an antistatic mat.**

11. **Mount the replacement BP by following the removal instructions in** Step 8 **and** Step 9 **in reverse order.**

Note – To mount a FAN BP on a fan shelf that has a guide pin, align the FAN BP with the guide pin during mounting.

Caution – Be sure not to hit connector parts of the BP against anything. Otherwise, the connection pins may be seriously damaged.

---

12. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

13. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

14. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

15. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement FANBP_A or FANBP_B, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

16. **Restore the original mode switch setting on the operator panel.**

CHAPTER 21

Sensor Unit Replacement

This chapter explains the replacement procedure for the sensor unit (SNSU). It covers the following:

- Section 21.1, “Overview of the SNSU” on page 21-1
- Section 21.2, “Cold Replacement” on page 21-4

As a replacement method for the SNSU, only the cold replacement method can be used. For the definition of the replacement method, see Section 4.1, “Types of Replacement Procedures” on page 4-2.

21.1 Overview of the SNSU

This section provides an overview of the SNSU and describes its mounting locations.

The sensor unit monitors the temperature and humidity of air drawn in by the server. The sensor unit consists of only a detecting element, and the controller block is built in to the operator panel. Active maintenance cannot be performed on the SNSU.

FIGURE 21-1, FIGURE 21-2, and FIGURE 21-3 show the mounting locations of the SNSUs of SPARC Enterprise M8000 server, SPARC Enterprise M9000 server (base cabinet), and the base cabinet of SPARC Enterprise M9000 server with the expansion cabinet respectively.

FIGURE 21-1 Mounting Location of the SNSU (Front of the M8000)

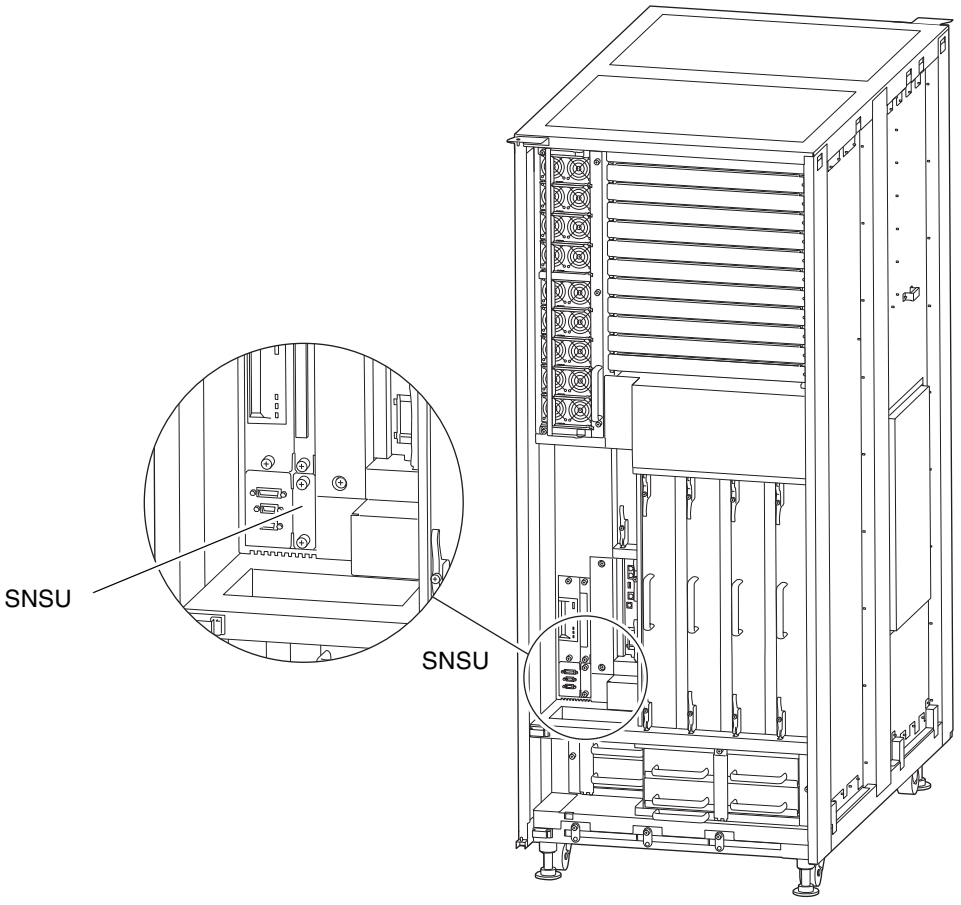


FIGURE 21-2 SNSU Mounting Location (Front of the M9000 Base Cabinet)

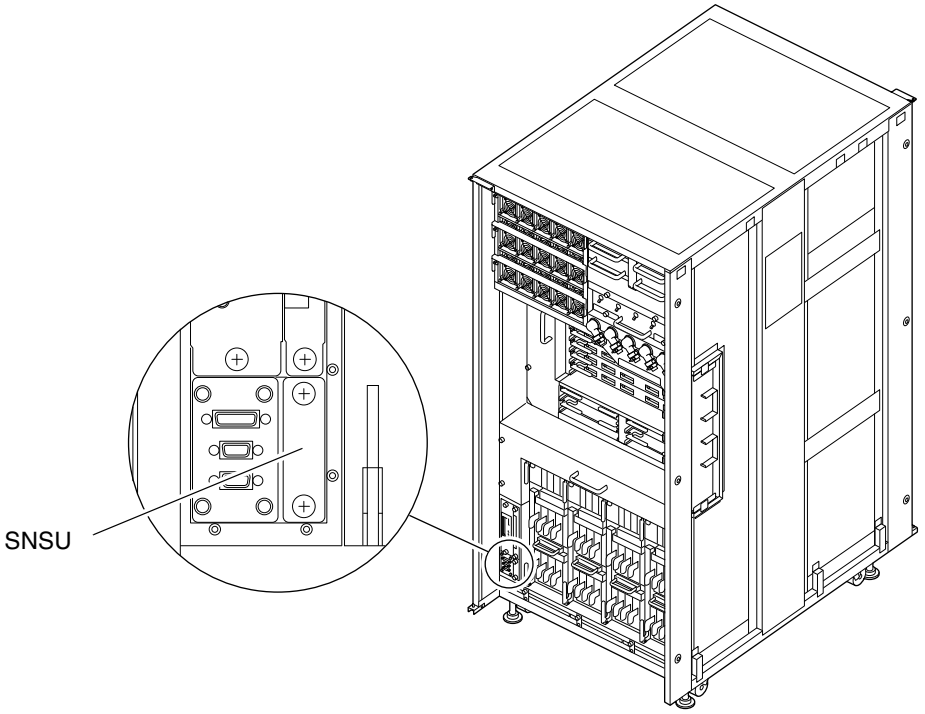


FIGURE 21-3 SNSU Mounting Location (Front of M9000 with the Expansion Cabinet)

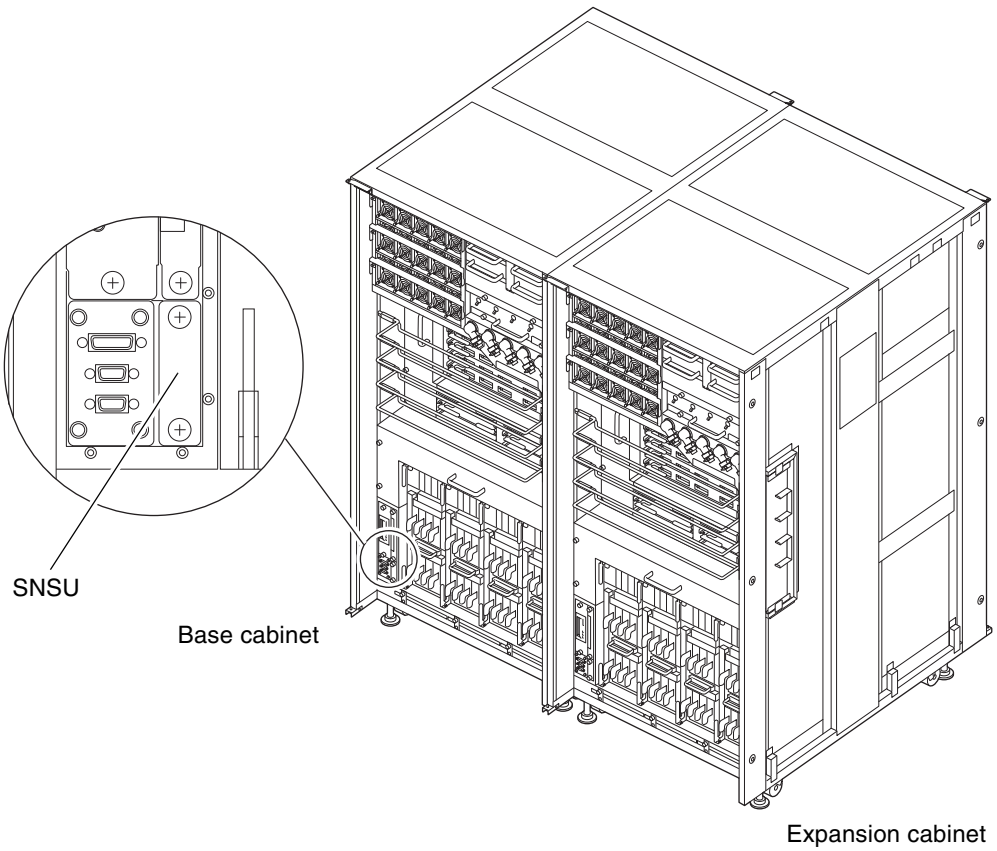


TABLE 21-1 lists the abbreviated names of the SNSUs.

TABLE 21-1 Abbreviated Names of the SNSU

Part name	Abbreviated name
Sensor unit	SNSU

21.2 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **Remove the SNSU to be replaced. (See FIGURE 21-4 or FIGURE 21-5)**

   a. **Using a Phillips screwdriver, loosen the two thumb screws in the SNSU.**

   b. **While grasping the thumb screws, pull out the SNSU carefully from the slot.**

FIGURE 21-4 Removing the SNSU (Front of the M8000)

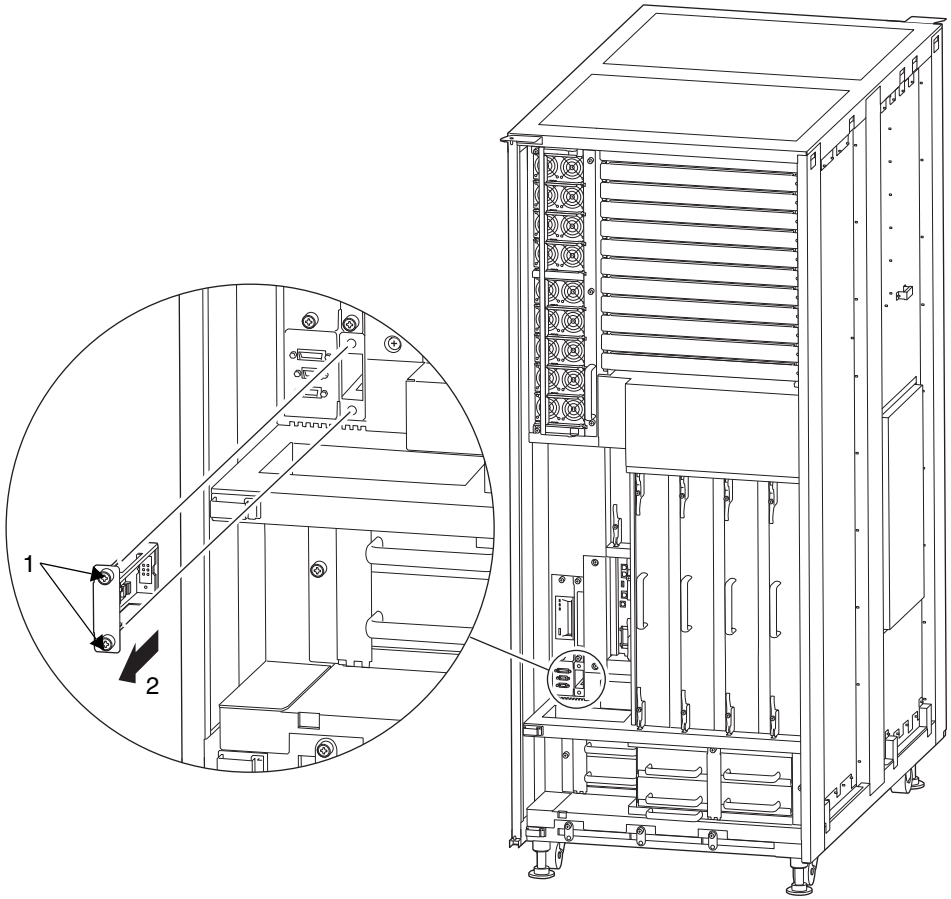
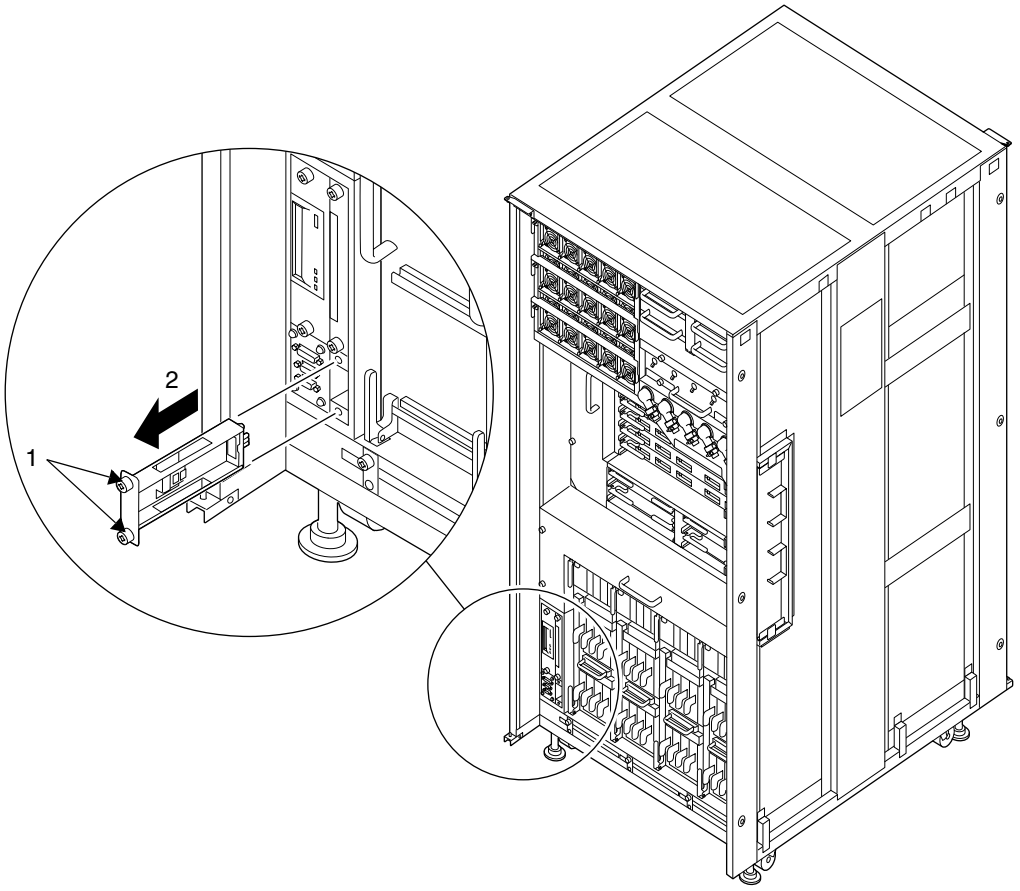


FIGURE 21-5 Removing the SNSU (Front of the M9000)



9. **Place the removed SNSU on an antistatic mat.**
10. **Mount the replacement SNSU by following the removal instructions in** Step 8 **in reverse order.**

Caution – Do not forcibly push the SNSU in when inserting it. If the SNSU is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

11. **Switch on all main line switches for the AC section (ACS) in the power supply system.**
12. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

13. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

14. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

15. **Close the door on the server, and lock it.**

CHAPTER 22

Media Backplane Replacement

This chapter explains the replacement procedure for media backplanes (MEDBPs). It covers the following:

- Section 22.1, "Overview of the MEDBP" on page 22-1
- Section 22.2, "Cold Replacement" on page 22-5

As a replacement method for MEDBPs, only the cold replacement method can be used. For the definition of the replacement method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

22.1 Overview of the MEDBP

This section provides an overview of MEDBPs and describes their mounting locations.

A MEDBP provides the connectors for mounting a tape drive unit (TAPEU) and CD-RW/DVD-RW drive unit (DVDU) in a cabinet. These connectors serve as sockets on the cabinet side for connecting a tape drive unit and CD-RW/DVD-RW drive unit to the cabinet. A MEDBP is further connected to a switch backplane, through which it connects the tape drive unit or CD-RW/DVD-RW drive unit to the IOU. Active maintenance cannot be performed on a MEDBP.

FIGURE 22-1, FIGURE 22-2, and FIGURE 22-3 show the mounting locations of the MEDBP of M8000, M9000 (base cabinet), and M9000 (with the expansion cabinet), respectively.

FIGURE 22-1 MEDBP Mounting Location (Rear of the M8000)

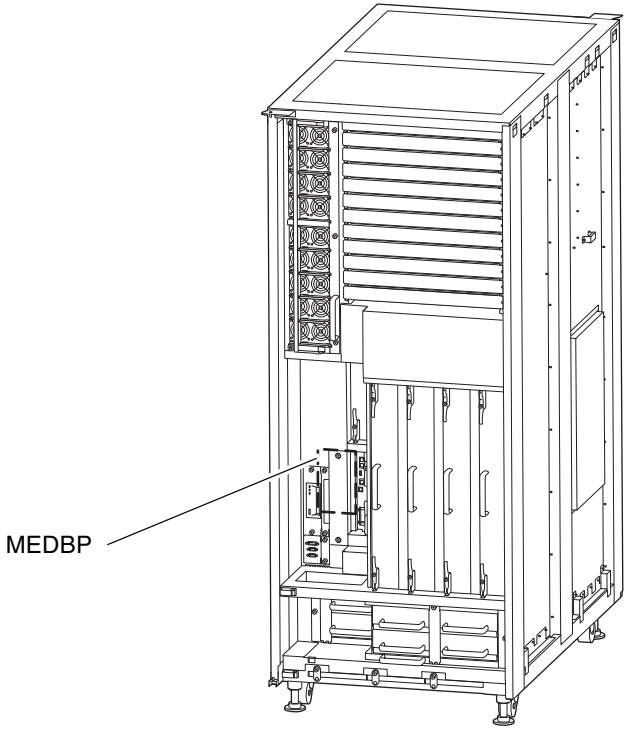


FIGURE 22-2 MEDBP Mounting Location (Front of the M9000 Base Cabinet)

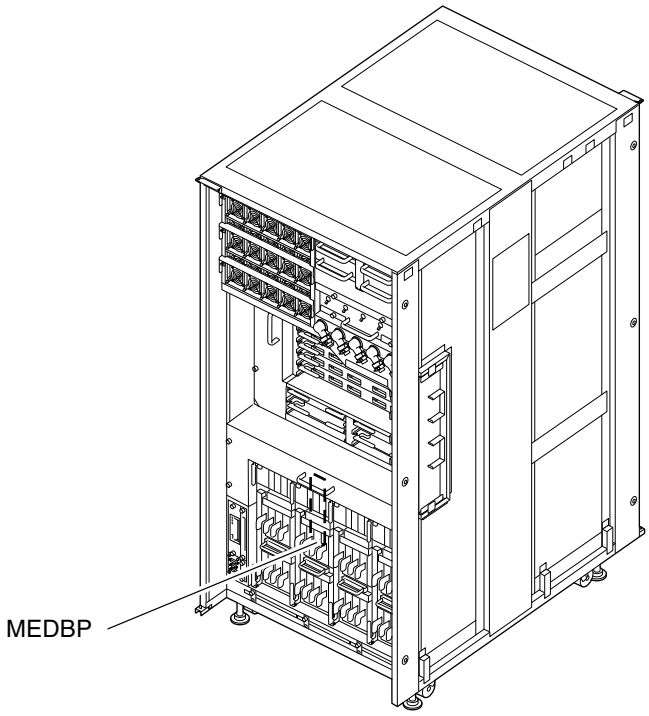


FIGURE 22-3 MEDBP Mounting Locations (Front of M9000 with the Expansion Cabinet)

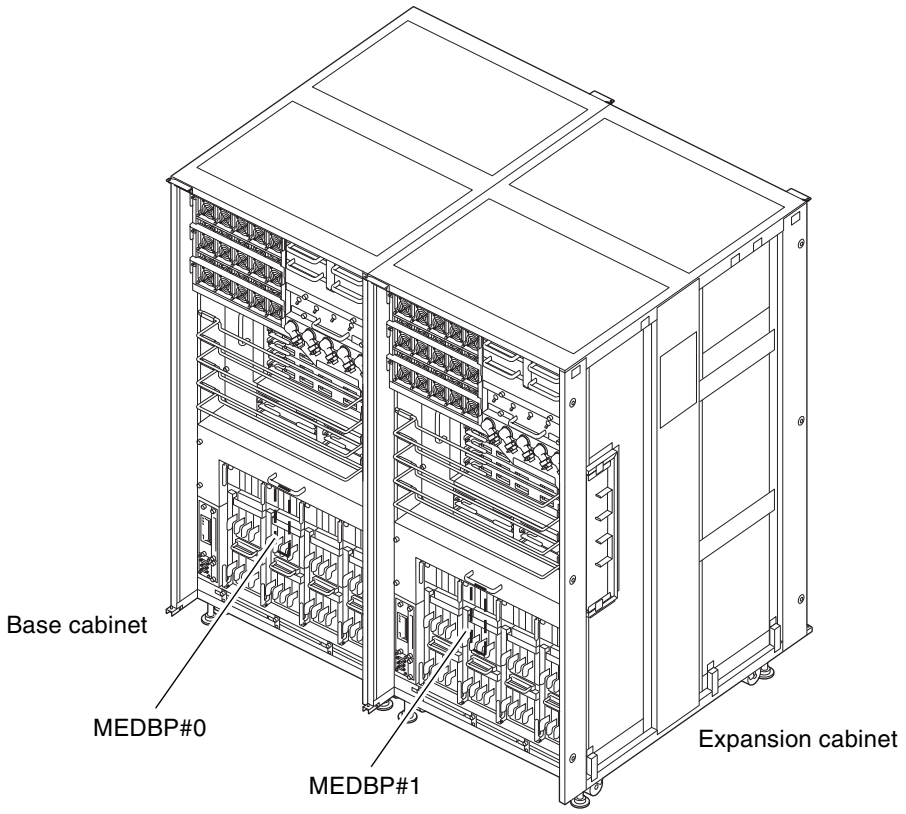


TABLE 22-1 lists the abbreviated names and numbers of the MEDBPs.

TABLE 22-1 Abbreviated Names and Numbers of MEDBPs

Model name	Abbreviated names and numbers
M8000	MEDBP
M9000 with the base cabinet	MEDBP
M9000 with the expansion cabinet (base cabinet side)	MEDBP#0
M9000 with the expansion cabinet (expansion cabinet side)	MEDBP#1

22.2 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, “Main Line Switch Locations” on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

---

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

---

8. **Remove the following components so that you can access the MEDBP to be replaced.**

   M8000 (See FIGURE 22-4):

   a. **Remove the tape drive unit. (See** Chapter 15**)**

   b. **Remove the CD-RW/DVD-RW drive unit. (See** Chapter 14**)**

   c. **Using a Phillips screwdriver, loosen the two retaining screws to remove the partition box located between the CD-RW/DVD-RW drive unit and XSCFU.**

   d. **Remove the two XSCFUs. (See** Chapter 11**) If any cable is connected, remove it.**

M9000 (See FIGURE 22-5):

a. **Remove the tape drive unit. (See Chapter 15)**

b. **Remove the CD-RW/DVD-RW drive unit. (See Chapter 14)**

c. **Remove I/O units #0, #2, and #4 (IOU#0, IOU#2, and IOU#4) on the right side of the CD-RW/DVD-RW drive unit. A filler panel may be mounted depending on the option configuration. (See Chapter 7)**

9. **Remove the MEDBP to be replaced.**

a. **Using a Phillips screwdriver, loosen the two thumb screws securing the MEDBP.**

b. **Slide the MEDBP to the right.**

c. **Disconnect the two cables connected to the rear of the MEDBP.**

Note – Be sure to press both lock release buttons inward and pull the connector when removing the SAS cable (lock release buttons of the connector are yellow).

---

d. **Along the guide, and remove MEDBP carefully**

FIGURE 22-4 Removing the MEDBP (Front of the M8000)

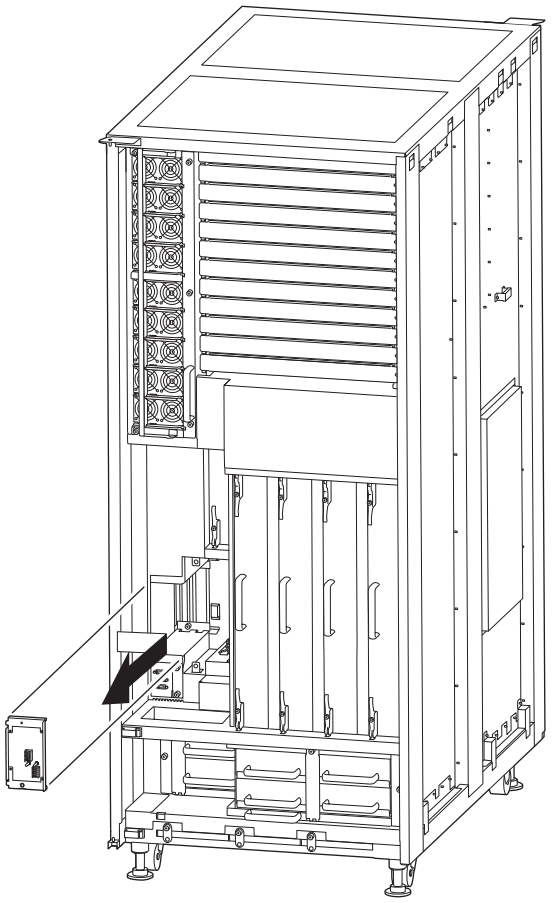
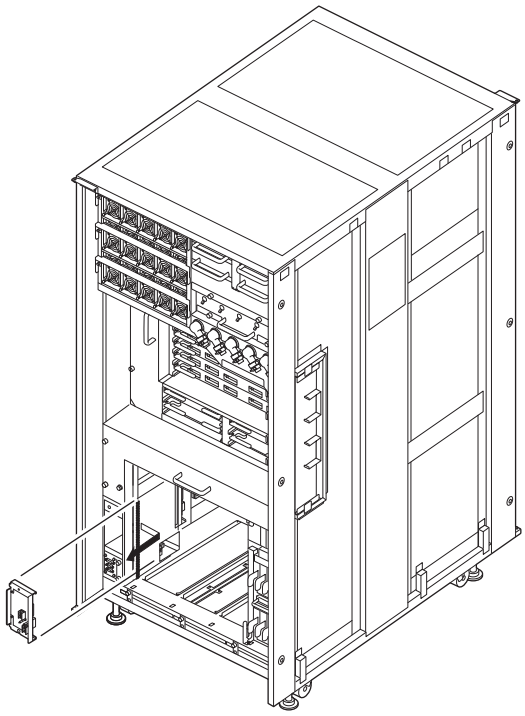


FIGURE 22-5 Removing the MEDBP (Front of the M9000)



10. **Place the removed MEDBP on an antistatic mat.**
11. **Mount the replacement MEDBP by following the removal instructions in** Step 8 **and** Step 9 **in reverse order.**

Caution – Do not forcibly push the MEDBP in when inserting it. If the MEDBP is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.

12. **Switch on all main line switches for the AC section (ACS) in the power supply system.**
13. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**
14. **Start (turn on power) all domains together. Take either of the following two actions:**
    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.

- From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

15. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

16. **Close the door on the server, and lock it.**

CHAPTER 23

Switch Backplane Replacement

This chapter explains the replacement procedure for switch backplanes (SWBPs). It covers the following:

- Section 23.1, "Overview of SWBPs" on page 23-1
- Section 23.2, "Cold Replacement" on page 23-5

As a replacement method for SWBPs, only cold replacement can be used. For the definition of the replacement method, see Section 4.1, "Types of Replacement Procedures" on page 4-2.

23.1 Overview of SWBPs

This section provides an overview of SWBPs and describes their mounting locations.

A SWBP is connected to a tape drive unit (TAPEU) and CD-RW/DVD-RW drive unit (DVDU) to an I/O unit (IOU) through the media backplane. An expander that performs the switching of serial attached SCSI (SAS) interfaces is mounted on a SWBP. Active maintenance cannot be performed on an SWBP.

FIGURE 23-1, FIGURE 23-2, and FIGURE 23-3 show the mounting locations of SWBPs of M8000, M9000 (base cabinet), and M9000 (with the expansion cabinet), respectively.

FIGURE 23-1 SWBP Mounting Location (Rear of the M8000)

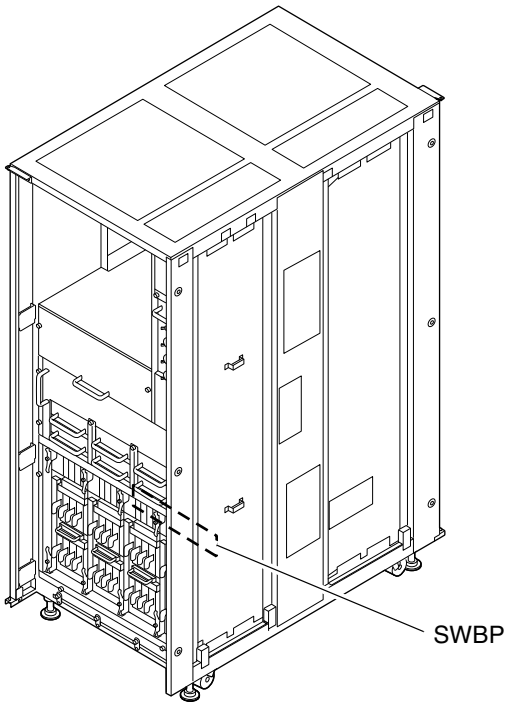


FIGURE 23-2 SWBP Mounting Location (Front of the M9000 Base Cabinet)

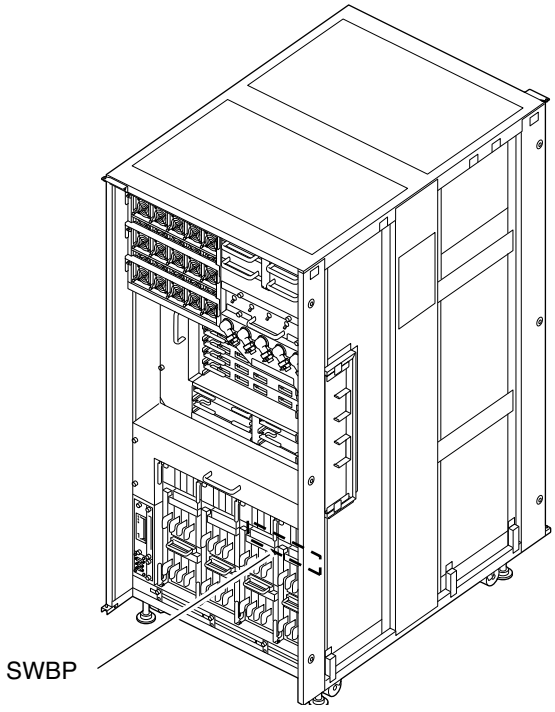


FIGURE 23-3 SWBP Mounting Locations (Front of M9000 with the Expansion Cabinet)

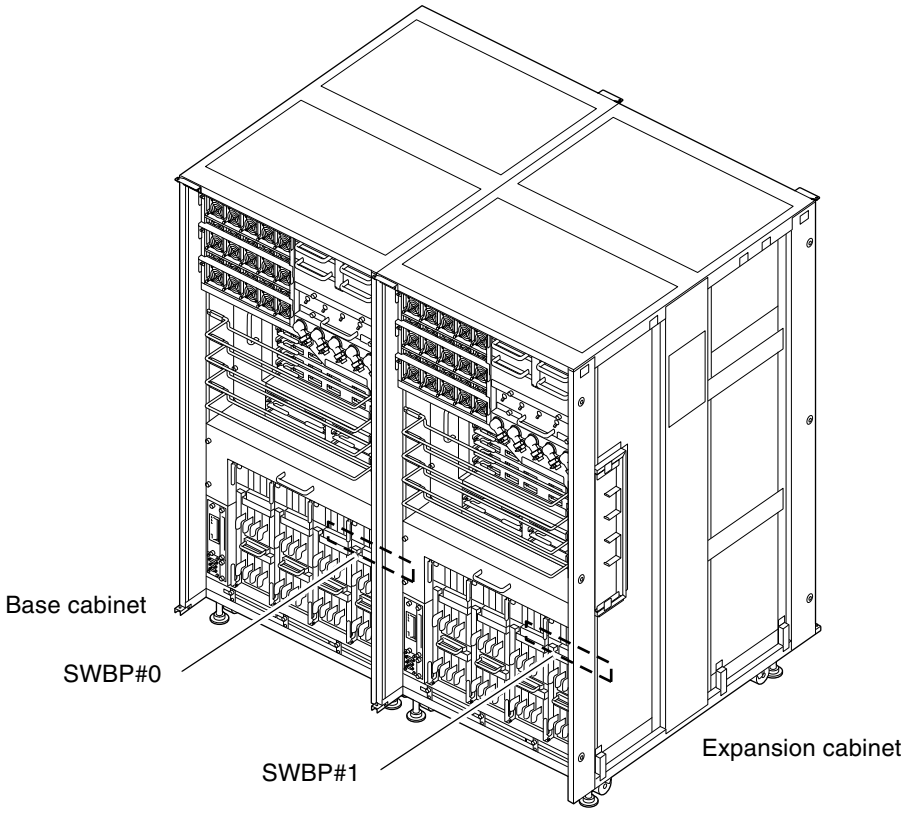


TABLE 23-1 lists the abbreviated names and numbers of the SWBPs.

TABLE 23-1 Abbreviated Names and Numbers of SWBPs

Model name	Abbreviated names and numbers
M8000	SWBP
M9000 with the base cabinet	SWBP
M9000 with the expansion cabinet (base cabinet side)	SWBP#0
M9000 with the expansion cabinet (expansion cabinet side)	SWBP#1

23.2 Cold Replacement

In cold replacement, none of the replacement work is performed with the maintenance menu from a terminal connected to XSCF.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Note – If the optional three-phase 200 VAC input power supply unit is installed, the main line switches are located on the three-phase ACS.

Caution – If the dual power feed option is installed, switch off the main line switches for both power supply units.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power.

6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **Remove the following parts so that you can access the SWBP to be replaced.**

   M8000 (See FIGURE 23-4):

   Remove all I/O units (IOUs). (See Chapter 7)

   M9000 (See FIGURE 23-5):

   Remove all I/O units (IOUs) on the operator panel side. (See Chapter 7)

9. **Remove the SWBP to be replaced. (See** FIGURE 23-4 **or** FIGURE 23-5**).**

   a. **Disconnect five (SPARC Enterprise M9000 server) or three (SPARC Enterprise M8000 server) signal cables and two power cords from the BP while unlocking the connectors.**

Note – Be sure to press both lock release buttons inward and pull the connector when removing the SAS cables (lock release buttons of the connector are yellow).

   b. **Using a Phillips screwdriver, loosen the two screws securing the SWBP.**

   c. **Pull out the SWBP carefully.**

FIGURE 23-4 Removing the SWBP (Rear of the M8000)

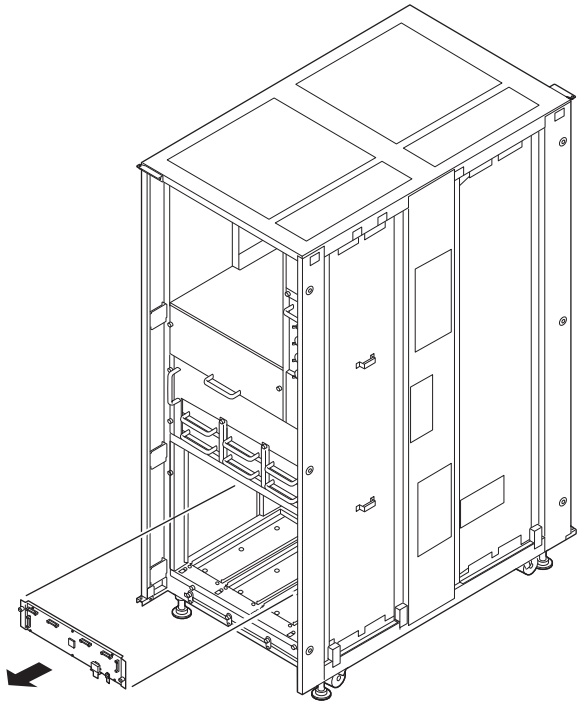
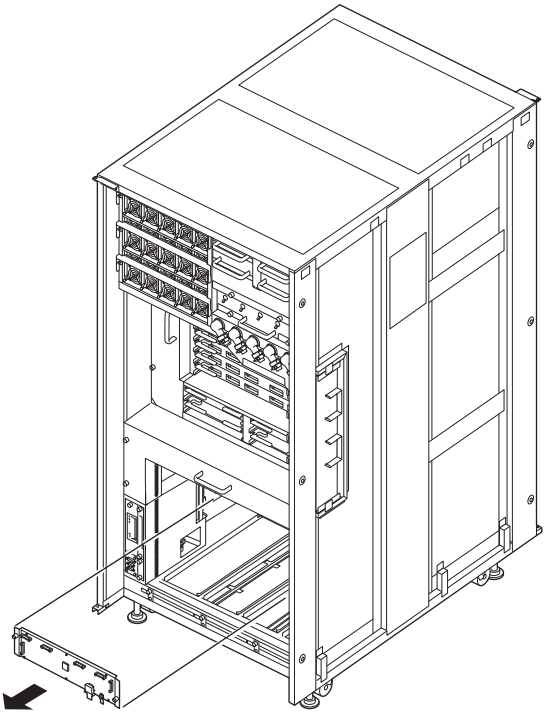


FIGURE 23-5 Removing the SWBP (Front of the M9000)



10. **Place the removed SWBP on an antistatic mat.**

11. **Mount the replacement SWBP by following the removal instructions in** Step 8 **and** Step 9 **in reverse order.**

Caution – Do not forcibly push the SWBP in when inserting it. If the SWBP is forcibly inserted despite the presence of any obstruction in a slot or any problems with the connector pin, serious damage may result.
The connector on the left edge of the base plate of the switch BP is not used for the SPARC Enterprise M8000 server. Be aware of this when connecting cables.

12. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

13. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

14. **Start (turn on power) all domains together. Take either of the following two actions:**

    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
    - From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

    The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

    For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

15. **Restore the original mode switch setting on the operator panel.**

Note – When the maintenance work is completed, be sure to confirm the mode switch setting and return the switch to Locked.

---

16. **Close the door on the server, and lock it.**

CHAPTER 24

Addition and Deletion of a RDPF Option, Power Cabinet, and M9000 Expansion Cabinet

This chapter explains the procedures for adding and deleting a rack-mountable dual power feed option (RDPF), a power cabinet, and an M9000 expansion cabinet, all of which are server options. In the chapter, deletion of such an option means that the work of removing it involves moving the server.

These options are not FRUs. Normally, the system configuration has been determined prior to shipment, so the options are not intended to be added or deleted by a user or field engineer. However, if the system configuration is changed or the system is transported to another location, addition or deletion of one of the options may be required. The sections below explain the following:

- Section 24.1, "Addition and Deletion of Rack-mountable Dual Power Feed" on page 24-2
- Section 24.2, "Addition and Deletion of Power Cabinet" on page 24-13
- Section 24.3, "Addition and Deletion of M9000 Expansion Cabinet" on page 24-16

For the basic installation procedures, see the *SPARC Enterprise M8000/M9000 Servers Installation Guide*. No section in the *SPARC Enterprise M8000/M9000 Servers Installation Guide* explains this addition and deletion work. Interpret an installation procedure as an addition procedure and a removal procedure as a deletion procedure.

24.1 Addition and Deletion of Rack-mountable Dual Power Feed

This section explains the procedure for replacing a rack-mountable dual power feed unit (RDPF). The sections below explain the following:

- Section 24.1.1, "Overview of RDPF" on page 24-2
- Section 24.1.2, "Addition and Deletion" on page 24-3

Turn off the server power before adding or deleting a rack-mountable dual power feed option.

24.1.1 Overview of RDPF

This section provides an overview of rack-mountable dual power feed and describes the mounting location.

Rack-mountable dual power feed is the M8000 dedicated option. It is mounted on equipment rack of M8000. In case that M8000 uses the single-phase AC power input, rack-mountable dual power feed enables it to receive the supply of power from the separate independent external power supply and assures the power output to the servers in time of errors of external power. A rack-mountable dual power feed option is never a target of hot replacement because it is not a FRU.

FIGURE 24-1 shows the mounting location of rack-mountable dual power feed of M8000.

FIGURE 24-1 RDPF Mounting Location (M8000)

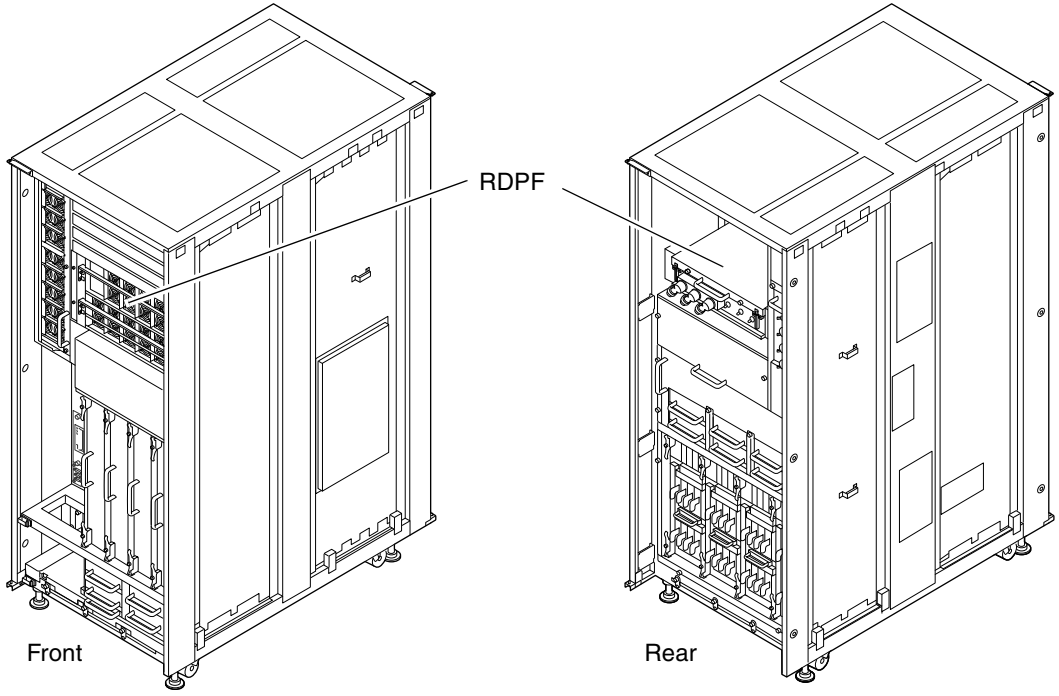


TABLE 24-1 lists the abbreviated name of rack-mountable dual power feed of M8000.

TABLE 24-1 Abbreviated Name of Rack-mountable Dual Power Feed

Component name	Abbreviated name
Rack-mountable dual power feed	RDPF

24.1.2 Addition and Deletion

24.1.2.1 Addition

Note – When you order the rack-mountable dual power feed, it is attached with the rack-mountable kit (bus bar, fixing bracket, screws etc.) to mount the main body of rack-mountable dual power feed to M8000.

The procedure is as follows.

1. **Unlock and open a door of the server.**

   For details, see Chapter 5.

Caution – Before touching FRU or the dummy (filler) unit, see Section 1.4, "Antistatic Precautions" on page 1-6 and be sure to wear the antistatic wrist strap. Failure to do so might result in serious damage to operating domains.

2. **Change the mode switch setting on the operator panel from Locked to Service.**

Note – Unless the mode switch is set to Locked when the maintenance work is completed, the error notification function is disabled. Be sure to restore and confirm the switch setting when the work is completed.

3. **Stop (turn off power) all domains together. Take either of the following two actions:**

   - Press and hold the POWER switch on the operator panel for at least four seconds.
   - From a console that is connected to XSCF, log in to XSCF, and execute the `poweroff -a` command.

   The OS shutdown processing is executed for all the domains, and then the power-off processing is executed.

4. **Confirm that the power-off processing is completed by confirming that the POWER LED (green) on the operator panel is off.**

5. **Switch off all main line switches for AC section (ACS) of power supply system.**

   For details, see Section 4.5.3, "Main Line Switch Locations" on page 4-27.

Caution – After stopping all the domains, be sure to switch off the main line switches in the power supply system to completely shut off the supply of power. Disconnect the power cord from the customer's distribution panel.

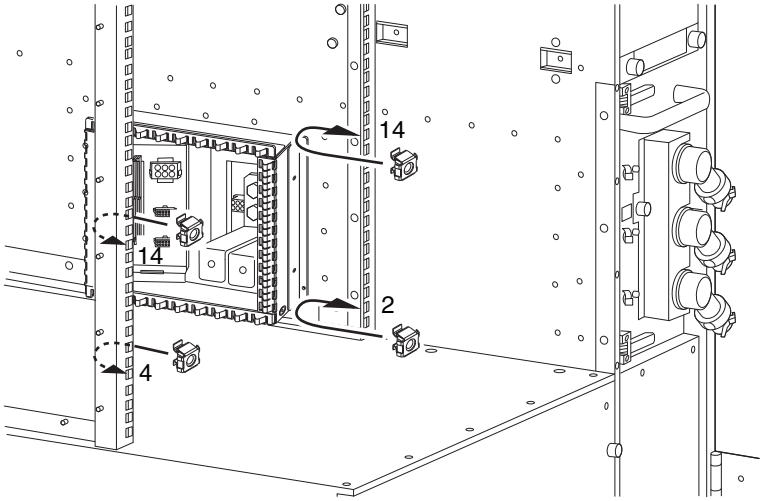
6. **Connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port. See** Section 1.4, "Antistatic Precautions" on page 1-6**.**

7. **Ensure that the metallic underside of the wrist strap is in direct contact with your skin. The wrist strap should be snug around the wrist so that it does not rotate. See** Section 1.4, “Antistatic Precautions” on page 1-6**.**

Caution – Before handling FRUs, be sure to connect the clip of the antistatic wrist strap and of the antistatic mat to the server grounding port, and attach the band of the wrist strap to one of your wrists. Place the FRUs on the grounded antistatic mat. Failure to take these antistatic measures might result in serious damage.

8. **Place the additional rack-mountable dual power feed on an antistatic mat.**
9. **Mount the rack-mountable dual power feed.**
   a. **Remove the six dummy panels from the bottom of the equipment rack of the M8000.**
   b. **Remove the cover panel (together with four screws) of the M8000, and mount the two bus bars (L shape) from the installation kit by using two bolts. (Torque: 8.24 N*m (84 kgf*cm))**
   c. **Remove the connector panel (together with a thumb screw) of the M8000, and mount it (with a thumb screw) on the mounting bracket from the installation kit.**
   d. **Mount the mounting bracket on the M8000 (with four screws, at the mounting location of the covering panel).**
   e. **Mount the cage nuts from the installation kit on the two poles (two for each pole) at the rear of the equipment rack of the M8000.**

FIGURE 24-2 Mounting Locations of cage Nuts

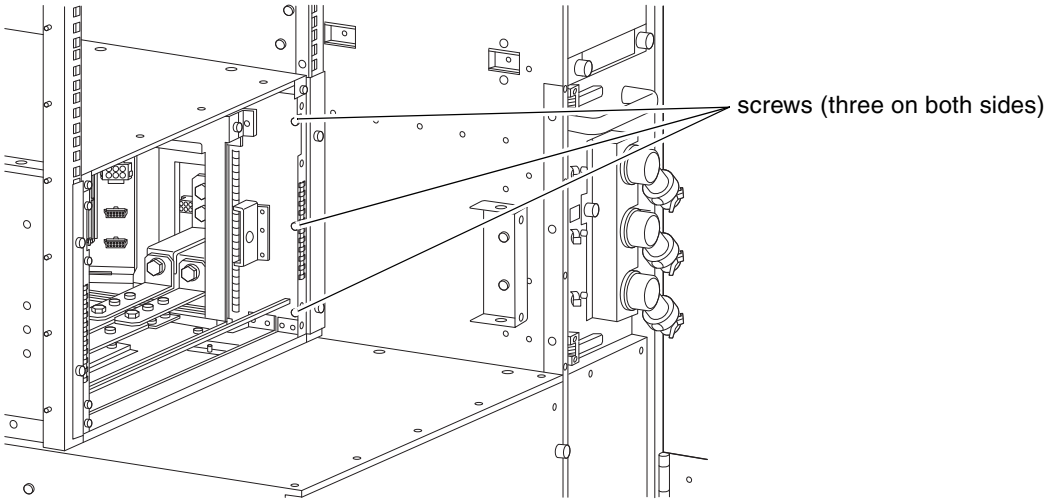


f. Mount the dual power feed unit at the front of the equipment rack of the M8000.

g. **Mount the dual power feed unit (with four screws) on the two poles at the front of the equipment rack of the M8000.**

Note – When securing the rack-mountable dual power feed unit on the equipment rack, keep it positioned close to the PSUs of the M8000.

FIGURE 24-3 Mounting the Screws of Rack-mountable Dual Power Feed (Rear of M8000)



h. **Remove the right screw securing the connector unit at the rear of the dual power feed unit, loosen the left screw, slide the connector unit to the right, and remove it.**

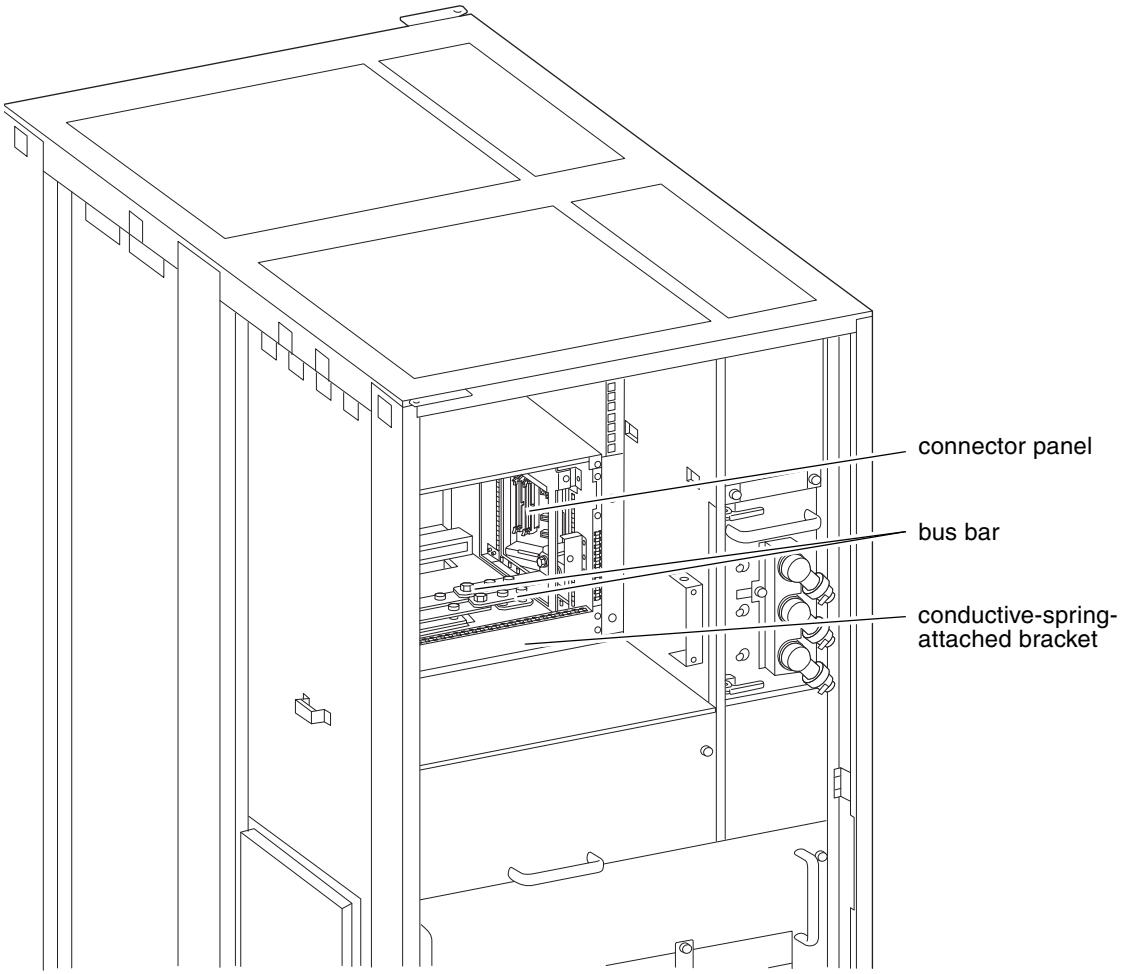
i. **Mount the two brackets (mound shaped) on the two poles (with two screws for each pole) at the rear of the equipment rack of the SPARC Enterprise M8000 server.**

j. **Secure the rear of the dual power feed unit on the two brackets (with three screws each).**

k. **Connect the bus bars that were mounted in Step b to the bus bar at the rear of the dual power feed unit by using the two bus bars (Z shape) from the installation kit. Secure them with bolts. (Torque: 8.24 N*m (84 kgf*cm))**

l. **Connect the connectors of the four cables protruding from the rear of the dual power feed unit to the DC1 connector panel.**

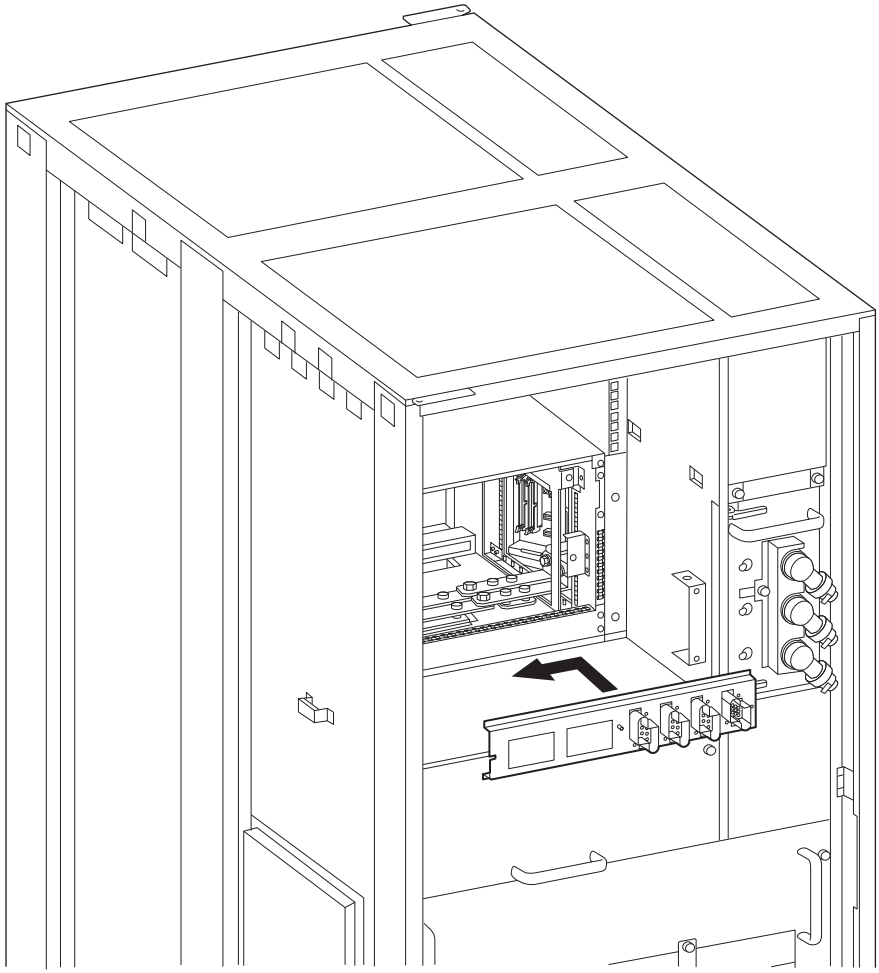
FIGURE 24-4 Mounting the Cable (Rear of M8000)



m. Mount the bracket with a conductive spring (with two screws) at the bottom rear of the dual power feed unit.

n. Mount the connector unit that was removed in Step h at its original location.

FIGURE 24-5 Mounting the Connector Unit (Rear of M8000)

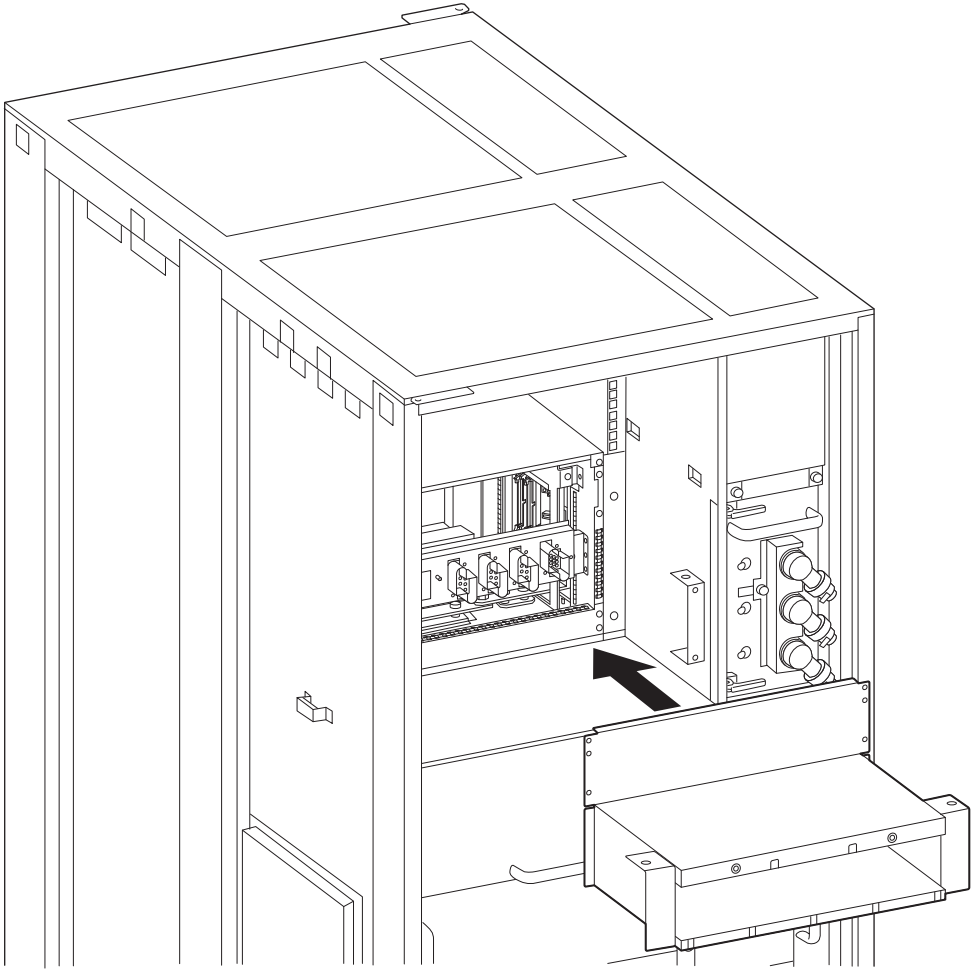


o. Mount the two brackets (with two screws each) for securing the ACS on the side panel at the rear of the equipment rack of the M8000. For their mounting locations, use the second and third holes from the bottom, and secure them.

p. From the rear of the server, mount the ACS mounting frame, and secure it at the rear of the server (with three screws each on both sides). Secure the two brackets for securing the ACS (one screw each) and the dual power feed unit at the rear of the server (with three screws on each side).

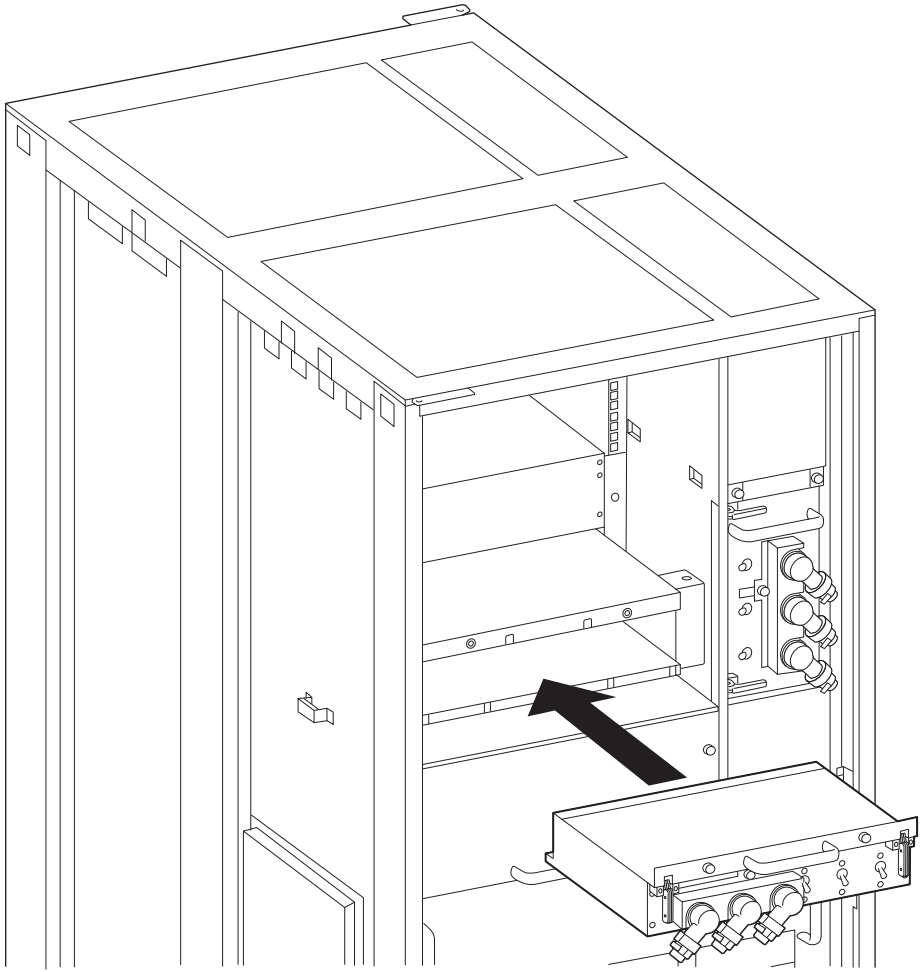
q. Secure the ACS mounting frame and the two brackets mounted in Step o with screws (one screw each).

FIGURE 24-6 Mounting the Frame for ACS Mount (Rear of M8000)



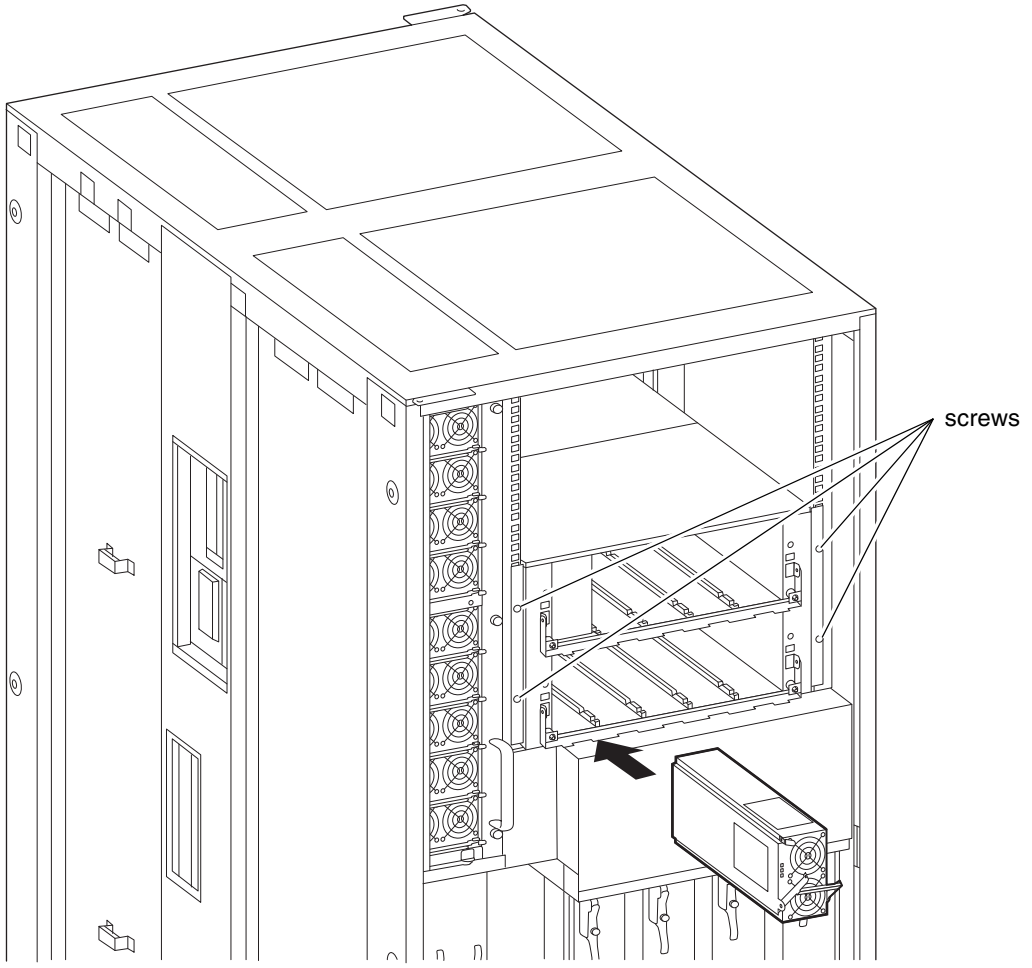
r. **Using two thumb screws, mount the AC section (ACS) on the frame for mounting the ACS. For details, see** Chapter 18**.**

FIGURE 24-7 Removing the ACS (Rear of M8000)



s. Mount nine power supply units (PSUs) at the front of the dual power feed unit. For details, see Chapter 9**.**

FIGURE 24-8 Mounting the PSU (Front of the M8000)



10. **Connect power cords to the added rack-mountable dual power feed unit.**
11. **Switch on all main line switches for AC section (ACS) of both power supply systems.**
12. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**
13. **Start (turn on power) all domains together. Take either of the following two actions:**
    - Press and hold down (for less than four seconds) the POWER switch on the operator panel.

- From a console that is connected to XSCF, execute the `poweron -a` command of XSCF.

The power to all the domains is turned on, and then the power-on self test (POST) is executed. When ok prompt displayed on the console of relevant domain, POST is completed.

For details of the power-on operation, see Section 4.4.2, "Powering the Server On" on page 4-19, and the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*.

14. **Confirm that the replacement components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

    Unless "*" is displayed for the replacement RDPF, it is operating normally.

    For details of the `showhardconf` command and `showstatus` command, see the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF User's Guide*, the *SPARC Enterprise M3000/M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*, or the man page.

Note – The `showstatus` command displays information on degraded components.

---

15. **Restore the original mode switch setting on the operator panel.**

Note – Unless the mode switch is set to Locked when the maintenance work is completed, the error notification function is disabled. Be sure to restore and confirm the switch setting when the work is completed.

---

16. **Close the door on the server, and lock it.**

24.1.2.2 Deletion

Follow the addition instructions in reverse order.

24.2 Addition and Deletion of Power Cabinet

The three procedures listed below can be used. Regardless of the procedure used, see the power cabinet installation procedure explained in the *SPARC Enterprise M8000/M9000 Servers Installation Guide*.

- Adding or deleting a power cabinet for the SPARC Enterprise M8000 server with three-phase dual power feed configured

- Adding or deleting a power cabinet for the SPARC Enterprise M9000 server base cabinet with single-phase or three-phase dual power feed configured
- Adding or deleting a power cabinet for the SPARC Enterprise M9000 server expansion cabinet with single-phase or three-phase dual power feed configured

FIGURE 24-9, FIGURE 24-10, and FIGURE 24-11 show installation diagrams for each case.

FIGURE 24-9 M8000 + Power Cabinet

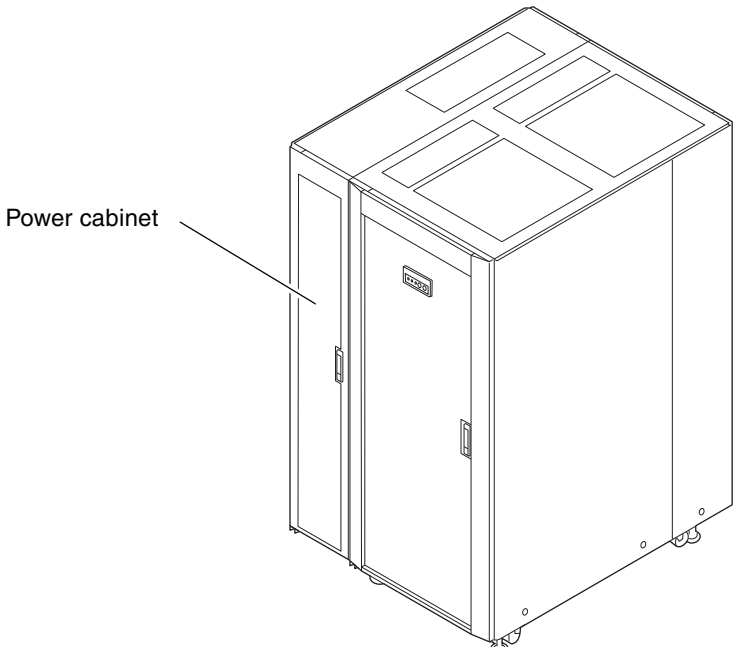


FIGURE 24-10 M9000 Base Cabinet + Power Cabinet

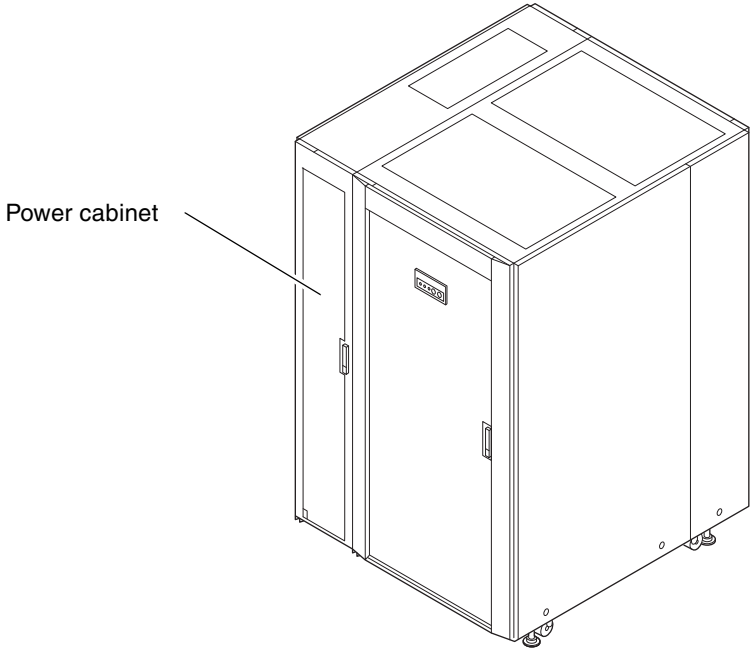
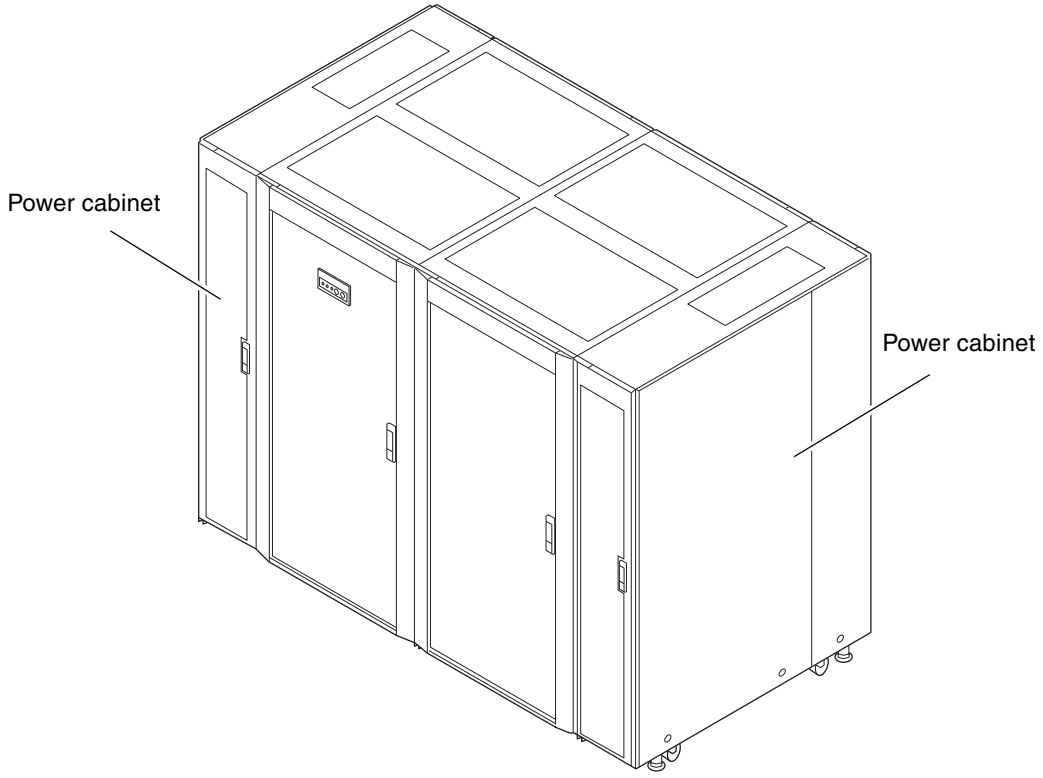


FIGURE 24-11 M9000 Expansion Cabinet + Power Cabinet



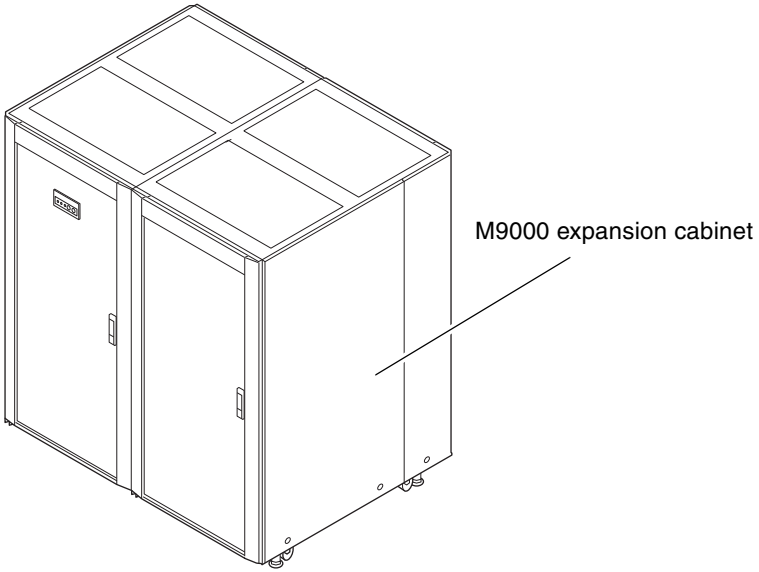
24.3 Addition and Deletion of M9000 Expansion Cabinet

The procedure listed below can be used. For details, see the power cabinet installation procedure explained in the *SPARC Enterprise M8000/M9000 Servers Installation Guide*.

- Adding or deleting an M9000 expansion cabinet for the M9000 base cabinet

FIGURE 24-12 shows an installation diagram of the cabinets.

FIGURE 24-12 M9000 Base Cabinet + M9000 Expansion Cabinet



CHAPTER 25

Addition and Deletion of CMU, DIMM, IOU, HDD, PCI Cards and TAPEU

This chapter explains the procedures for installing new FRUs and removing existing FRUs. These procedures are called addition and deletion.

The following topics are covered in this chapter.

- Section 25.1, “Addition” on page 25-2
- Section 25.2, “Deletion” on page 25-4

All FRUs can be replaced, as shown in the chapters preceding , but addition and deletion are limited to the following FRUs.

Since the details for adding and deleting FRUs are the same as some details for replacing FRUs, this chapter explains only the main points. For more details, refer to the appropriate chapter on FRU replacement.

These FRUs can be added:

- CPU/Memory board unit (CMU)
- DIMM
- I/O unit (IOU)
- Hard Disk Drive (HDD)
- PCI card (PCI)
- Tape Drive Unit (TAPEU)

These FRUs can be deleted:

- CPU/Memory board unit (CMU)
- I/O unit (IOU)
- PCI card (PCI)

Some FRUs can be actively added or actively deleted:

- Active addition or removal of a CMU or IOU is possible using the DR function.
- Maintenance or addition of a DIMM module involves removing or installing a CMU.
- Active addition or removal of PCI cards (including link cards) is possible using the PHP function.
- Active addition of TAPEUs is possible

Caution – For deletion, a filler panel (TABLE 25-1) must be installed in the empty slot. Without filler panels, the system might overheat.

TABLE 25-1 Filler Panels

Slot location	Filler panel name
CMU	CMU filler panel
IOU	IOU filler panel
PCI	PCI filler panel

25.1 Addition

Some steps for adding a FRU are the same as for replacing a FRU. For more details, refer to the appropriate chapter on FRU replacement.

25.1.1 Active Addition

First, select a unit to be added as described below.

1. **Log in to the XSCF.**
2. **Execute the** `addition` **command (**`addfru`**).**

```
XSCF> addfru
```

3. **When the following addition menu is displayed, select the type of FRU to be added.**

FIGURE 25-1 Initial Page of the Maintenance Menu

```
------------------------------------------------
Maintenance/Addition Menu
Please select a type of FRU to be added.

1. CMU/IOU     (CPU Memory Board Unit/IO Unit)
2. FAN          (Fan Unit)
3. PSU          (Power Supply Unit)
------------------------------------------------
Select [1-3|c:cancel]:
```

Note – DDC_A is displayed only for the M8000.

Perform the operation according to the instructions displayed in the addition menu.

Note – In hot addition of an IOU, mount the CMU and IOU in the proper location. Otherwise, the added IOU may not operate.

25.1.2 Cold Addition

In cold addition the main line switches of the system are turned off and the addition menu is not available. Perform the addition according to the following procedure.

1. **Set the mode switch on the operator panel to Service.**
2. **Turn off power of all domains together.**

   Press and hold the POWER switch on the operator panel for at least four seconds or execute the `poweroff -a` command from XSCF.
3. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

4. **Add the FRUs.**

   Some steps for adding a FRU are the same as for replacing a FRU. For more details about the addition procedure, refer to the appropriate chapter on FRU replacement.

Note – In addition of an IOU, mount the CMU and IOU in the proper location. Otherwise, the added IOU may not operate after power-on.

---

5. **Switch on all main line switches for the AC section (ACS) in the power supply system.**
6. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**
7. **Start (turn on power to) all domains together using one of these steps:**
   - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
   - Execute the `poweron -a` command from XSCF.
8. **Confirm that the addition components are normal by using the `showhardconf` or `showstatus` command of XSCF.**

```
XSCF> showhardconf
```

   If "*" is not displayed for the addition FRU, it is operating normally.

Note – The `showhardconf` command cannot check the PCI card, Hard Disk Drive, and tape drive unit. To check the Hard Disk Drive and tape drive unit, use the `probe-scsi-all` command from the ok prompt. To check the PCI card, use the `show-devs` command from the ok prompt.

---

9. **When CMUs or IOUs are added, perform the SB settings and domain settings for each CMU and IOU.**

   Ask a system administrator or a domain administrator for assistance.
10. **Set the mode switch on the operator panel to Locked.**

25.2 Deletion

Some steps for deleting a FRU are the same as for replacing a FRU. For more details, refer to the appropriate chapter on FRU replacement.

25.2.1 Active Deletion

First, select a unit to be deleted as described below.

1. **Log in to the XSCF.**
2. **Execute the deletion command (`deletefru`).**

```
XSCF> deletefru
```

3. **When the following deletion menu is displayed, select the type of FRU to be deleted.**

FIGURE 25-2 Initial Page of the Maintenance Menu

```
------------------------------------------------
Maintenance/Removal (Deletion) Menu
Please select a type of FRU to be removed (deleted).

1. CMU/IOU     (CPU Memory Board Unit/IO Unit)
------------------------------------------------
Select [1|c:cancel]:
```

Note – DDC_A is displayed only for the M8000.

4. **Perform the operation according to the instructions displayed in the deletion menu.**

Caution – For deletion, a filler panel (TABLE 25-1) must be installed in the empty slot. Without filler panels, the system might overheat.

25.2.2 Cold Deletion

In cold deletion the main line switches of the system are turned off and the deletion menu is not available. Perform the deletion according to the following steps.

1. **Set the mode switch on the operator panel to Service.**
2. **Turn off power of all domains together.**

   Press and hold the POWER switch on the operator panel for at least four seconds or execute the `poweroff -a` command from XSCF.

3. **Switch off all main line switches for the AC section (ACS) in the power supply system.**

4. **Delete the FRUs.**

   The procedures are the same for removing of the replacement for the appropriate FRU. Some steps for deleting a FRU are the same as for replacing a FRU. For more details about the deletion procedure, refer to the appropriate chapter on FRU replacement.

Caution – For deletion, a filler panel (TABLE 25-1) must be installed in the empty slot. Without filler panels, the system might overheat.

5. **Switch on all main line switches for the AC section (ACS) in the power supply system.**

6. **Confirm that the XSCF STANDBY LED (green) on the operator panel remains lit. If it is blinking, wait until it remains lit.**

7. **Start (turn on power to) all domains together using one of these steps:**

   - Press and hold down (for less than four seconds) the POWER switch on the operator panel.
   - Execute the `poweron -a` command from XSCF.

8. **Confirm configuration information of the system by using the `showhardconf` command of XSCF.**

```
XSCF> showhardconf
```

   If the deleted FRU is not displayed, it is operating normally.

Note – The `showhardconf` command cannot check the PCI card, Hard Disk Drive, and tape drive unit. To check the Hard Disk Drive and tape drive unit, use the `probe-scsi-all` command from the ok prompt. To check the PCI card, use the `show-devs` command from the ok prompt.

9. **When CMUs or IOUs are deleted, cancel the SB settings and domain settings for each CMU and IOU.**

   Ask a system administrator or a domain administrator for assistance.

10. **Set the mode switch on the operator panel to Locked.**

APPENDIX **A**

System Configuration

This appendix describes the installation conditions and configuration of the SPARC Enterprise server.

A.1 Installation Conditions

The basic component of a domain configuration is the system board. The system board consists of only a single CPU/Memory Board Unit (CMU), or it consists of one CMU and one I/O Unit (IOU).

The system board mounting conditions are as follows:

- CPU Module (CPUM)

  Mount either two sets of two CPUMs, or one set of four identical CPUMs on the CMU.

  In the SPARC Enterprise M8000/M9000 server, the SPARC64 VI processor and SPARC64 VII processor can be mounted together.

  The following four CPUM combinations are supported as system board configurations:

(1)	(2)	(3)	(4)
CPU0-SPARC64 VI	CPU0-SPARC64 VI	CPU0-SPARC64 VII	CPU0-SPARC64 VII
CPU1-SPARC64 VI	CPU1-SPARC64 VI	CPU1-SPARC64 VII	CPU1-SPARC64 VII
CPU2-SPARC64 VI	CPU2-SPARC64 VII	CPU2-SPARC64 VI	CPU2-SPARC64 VII
CPU2-SPARC64 VI	CPU3-SPARC64 VII	CPU3-SPARC64 VI	CPU3-SPARC64 VII

Be sure to use the same type of CPUM in each pair (CPUM#0 and CPUM#1, or CPUM#2 and CPUM#3).

- Memory Module (DIMM)

  Mount DIMMs in sets of 16 DIMMs on the CMU.

  Mount memory modules of the same size and rank in each group.

- I/O Unit (IOU)

  When mounting an IOU, also mount the CMU whose component number represents the same mounting location as the IOU.

  Example: Be sure to mount IOU#1 together with CMU#1.

A.2 System Configuration

TABLE A-1 to TABLE A-3 outline the system configuration. These tables do not include some types of back plane.

A.2.1 SPARC Enterprise M8000 Server

This model has one cabinet.

Up to four CMUs (16 CPU chips / 32 cores) and four IOUs can be mounted on this model. A total of 32 core expansion is possible. The primary units such as the CMU, IOU, power supply unit, and FAN unit are common among the SPARC Enterprise servers. The model is a floor-stand type, with an equipment rack space provided at the top. (32 cores for the SPARC64 VI processors, 64 cores for the SPARC64 VII processors)

TABLE A-1 System Configuration for SPARC Enterprise M8000 Server

Unit		Number	Comments
Cabinet		1	
CMU		1 to 4	
	CPU module	2 or 4	
	• In case of SPARC64 VI processor		
	2.28 GHz, L2 cache 5M bytes 2.4 GHz, L2 cache 6M bytes		
	Two CPU cores per CPU chip		
	Two threads per CPU core (four threads per CPU module)		
	Maximum of 64 threads per system		
	• In case of SPARC64 VII processor		
	2.52 GHz, L2 cache 6M bytes		
	2.88 GHz, L2 cache 6M bytes		
	Four CPU cores per CPU chip		
	Two threads per CPU core (eight threads per CPU module)		
	Maximum of 128 threads per system		
	Memory module (DIMM)	16 or 32	
	1 rank:DIMM-1GB, DIMM-2GB, DIMM-4GB 2 rank:DIMM-2GB, DIMM-4GB, DIMM-8GB		
	In case of DIMM-2GB, the maximum is 256 GB/system.		
IOU		1 to 4	
	PCI cassette (card feeding adaptor)	8	
	At maximum, 32 cassettes per system		
	Slot#0, 2, 4, 6: PCI-EX short cards or IOU onboard device cards Slot#1, 3, 5, 7: PCI-EX short cards or link cards		

TABLE A-1 System Configuration for SPARC Enterprise M8000 Server *(Continued)*

Unit	Number	Comments
HDD	0 to 4	
HDD #0, 1: Slot#0 must have an IOU onboard device card. HDD #2, 3: Slot#4 must have an IOU onboard device card.		
XSCFU	2	duplicated configuration
FAN unit	12	N+1 fans redundant configuration
Power supply unit	9	N+1 redundant configuration
AC section	1	in case of single-phase power feed
Operator panel	1	
CD-RW/DVD-RW drive unit	1	
Tape drive unit	1	Option
BP power supply (DDC)	2	duplicated configuration
Other option		
External I/O expansion unit		
Single-phase and dual power feed option		
Power cabinet (three-phase power feed option: includes 2 units of AC section)		

A.2.2 SPARC Enterprise M9000 Server (Base Cabinet)

The SPARC Enterprise M9000 server is available in two models.

- This section describes the base cabinet.
- For a description of the base cabinet with an expansion cabinet, see Section A.2.3, "SPARC Enterprise M9000 Server (Base Cabinet + Expansion Cabinet)" on page A-6.

A maximum of eight CMUs (32 CPU chips / 64 cores) and eight IOUs can be mounted in the base cabinet. A total of 64 core expansion is possible. The primary units such as the CMU, IOU, power supply unit, and FAN unit are common among the SPARC Enterprise servers. This is a floor-stand type. (64 cores for the SPARC64 VI processors, 128 cores for the SPARC64 VII processors)

TABLE A-2 System Configuration for SPARC Enterprise M9000 Server

Unit		Number	Comments
Base cabinet		1	
CMU		1 to 8	
	CPU module	2 or 4	
	• In case of SPARC64 VI processor		
	2.28 GHz, L2 cache 5M bytes		
	2.4 GHz, L2 cache 6M bytes		
	Two CPU cores per CPU chip		
	Two threads per CPU core (four threads per CPU module)		
	Maximum of 128 threads per system		
	• In case of SPARC64 VII processor		
	2.52 GHz, L2 cache 6M bytes		
	2.88 GHz, L2 cache 6M bytes		
	Four CPU cores per CPU chip		
	Two threads per CPU core (eight threads per CPU module)		
	Maximum of 256 threads per system		
	Memory module (DIMM)	16 or 32	
	1 rank:DIMM-1GB, DIMM-2GB, DIMM-4GB 2 rank:DIMM-2GB, DIMM-4GB, DIMM-8GB		
	In case of DIMM-2GB, the maximum is 512 GB/system.		
IOU		1 to 8	
	PCI cassette (card feeding adaptor)	8	
	At maximum, 64 cassettes per system		
	Slot#0, 2, 4, 6: PCI-EX short cards or IOU onboard device cards		
	Slot#1, 3, 5, 7: PCI-EX short cards or link cards		
	HDD	0 to 4	
	HDD #0, 1: Slot#0 must have an IOU onboard device card.		

TABLE A-2 System Configuration for SPARC Enterprise M9000 Server *(Continued)*

Unit	Number	Comments
HDD #2, 3: Slot#4 must have an IOU onboard device card.		
XBU	8	
XSCFU	2	duplicated configuration
CLKU	2	duplicated configuration
FAN unit *	16	N+1 fans redundant configuration
Power supply unit *	15 or 30 x 2	N+1 redundant configuration
15 in single power, 30 in dual power (for each power feed)		
AC section	1	in case of single-phase power feed
Operator panel	1	
CD-RW/DVD-RW drive unit	1	
Tape drive unit	1	Option
Other options		
External I/O expansion unit		
Single-phase and dual power feed option		
Power cabinet (three-phase power feed option: includes 2 units of AC section)		

* Even if the number of mounted CMUs or IOUs is small, the server is shipped with a full set of FAN units and power supply units installed.

A.2.3 SPARC Enterprise M9000 Server (Base Cabinet + Expansion Cabinet)

This configuration includes the base cabinet and an expansion cabinet.

A maximum of 16 CMUs (64 CPU chips / 128 cores) and 16 IOUs can be mounted in this model. A total of 128 core expansion is possible. The primary units such as the CMU, IOU, power supply unit, and FAN unit are common among the SPARC Enterprise servers. This is a floor-stand type. (128 cores for the SPARC64 VI processors, 256 cores for the SPARC64 VII processors)

TABLE A-3 System Configuration for M9000 with Expansion Cabinet

Unit		Number	Comments
Cabinet		2	Connected by cables
CMU		2 to 16	
	1 to 8 per cabinet		
	CPU module	2 or 4	
	• In case of SPARC64 VI processor		
	2.28 GHz, L2 cache 5M bytes		
	2.4 GHz, L2 cache 6M bytes		
	Two CPU cores per CPU chip		
	Two threads per CPU core (four threads per CPU module)		
	Maximum of 256 threads per system		
	• In case of SPARC64 VII processor:		
	2.52 GHz, L2 cache 6M bytes		
	2.88 GHz, L2 cache 6M bytes		
	Four CPU cores per CPU chip		
	Two threads per CPU core (eight threads per CPU module)		
	Maximum of 512 threads per system		
	Memory module (DIMM)	16 or 32	
	1 rank:DIMM-1GB, DIMM-2GB, DIMM-4GB 2 rank:DIMM-2GB, DIMM-4GB, DIMM-8GB		
	In case of DIMM-2GB, the maximum is 1024 GB/system.		
IOU		2 to 16	
	1 to 8 per cabinet		
	PCI cassette (card feeding adaptor)	8	
	At maximum, 128 cassettes per system		

TABLE A-3 System Configuration for M9000 with Expansion Cabinet *(Continued)*

Unit		Number	Comments
	Slot#0, 2, 4, 6: PCI-EX short cards or IOU onboard device cards		
	Slot#1, 3, 5, 7: PCI-EX short cards or external I/O expansion unit connection cards		
	HDD	0 to 4	
	HDD #0, 1: Slot#0 must have an IOU onboard device card.		
	HDD #2, 3: Slot#4 must have an IOU onboard device card.		
XBU		16	
	8 per cabinet		
XSCFU		2 per cabinet	duplicated configuration
	with base cabinet having only the relaying function		
CLKU		2 per cabinet	duplicated configuration
FAN unit *		32	N+1 fans redundant configuration
	16 in base cabinet, 16 in expansion cabinet		
Power supply unit *		30	N+1 redundant configuration
	15 in base cabinet, 15 in expansion cabinet		
AC section		2	in case of single-phase power feed
	1 in base cabinet, 1 in expansion cabinet		
Operator panel		1	Mounted only on Base Cabinet
CD-RW/DVD-RW drive unit		2	
	1 in base cabinet, 1 in expansion cabinet		
Tape drive unit		2	option
	1 per cabinet		
Other options			
	External I/O expansion unit		

TABLE A-3 System Configuration for M9000 with Expansion Cabinet *(Continued)*

Unit		Number	Comments
	Single-phase and dual power feed option		
	Power cabinet		
	(three-phase power feed option: includes 2 units of AC section)		

* Even if the number of mounted CMUs or IOUs is small, the server is shipped with a full set of FAN units and power supply units installed.

APPENDIX **B**

Components

This Appendix describes each component making up SPARC Enterprise.

For the most up-to-date information, contact a certified service engineer.

TABLE B-1 gives the name and abbreviation of each component, and whether active replacement and hot replacement can be applied to each, together with the chapter and the section where the replacement procedure is explained.

A circle symbol (◯) means a component is replaceable. A dash (—) means a component is not replaceable.

TABLE B-1 FRU Components of High-end Server Models

Name:	Abbreviation	Active replacement	Hot replacement	Replacement procedure
CPU memory board unit: See B.1	CMU	◯ (*1)	◯	Chapter 6
• CPU module: See B.2	CPUM	◯ (*1)	◯	Chapter 6 In case of SPARC64 VI
	CPUM	◯ (*1)	◯	Chapter 6 In case of SPARC64 VII
• Memory: See B.3	MEM	◯ (*1)	◯	Chapter 6
I/O unit: See B.4	IOU	◯ (*1)	◯	Chapter 7
• Hard disk drive: See B.5	HDD	◯	◯	Chapter 12
• PCI cassette: See B.6	PCICS	◯ (*2)	◯	Chapter 13
• IOU Onboard Device Card: See B.7	IOUA	— (*3)	◯	Chapter 13
• External I/O expansion unit connection card: See B.8	PCIB-EX	◯ (*2)	◯	Chapter 13
Crossbar Unit: See B.9	XBU_B	—	—	Chapter 17
Clock Control Unit: See B.10	CLKU_B	—	—	Chapter 16

TABLE B-1 FRU Components of High-end Server Models *(Continued)*

Name:	Abbreviation	Active replacement	Hot replacement	Replacement procedure
XSCF unit (M8000/M9000 Servers for base cabinet) B.11	XSCFU_B	◯	◯	Chapter 11
XSCF Unit (For M9000 Server Expansion cabinet) B.11	XSCFU_C	◯	◯	Chapter 11
CD-RW/DVD-RW drive unit: See B.12	DVDU	◯	◯	Chapter 14
Tape drive unit: See B.13	TAPEU	◯	◯	Chapter 15
Operator Panel: See B.14	OPNL	—	—	Chapter 10
Sensor Unit: See B.15	SNSU	—	—	Chapter 21
Power supply unit: See B.16	PSU	◯ (*4)	◯	Chapter 9
AC section (For M8000 Server) B.17	ACS_A ACSTPH-A	—	—	Chapter 18 Single-phase Single-phase dual power feed Three-phase dual power feed (delta connection) Three-phase dual power feed (star connection)
AC section (For M9000 Server) B.17	ACS_B ACSTPH-B	—	—	Chapter 18 Single-phase Three-phase dual power feed (delta connection) Three-phase dual power feed (star connection)
AC section (For dual power feed option) B.17	ACS_D	—	—	Chapter 18 Option
FAN unit (3 FAN): See B.18	FAN_A	◯ (*5)	◯	Chapter 8
FAN unit (2 FAN): See B.18	FAN_B	◯ (*5)	◯	Chapter 8
M8000 Backplane B.21	BP_A	—	—	Section 20.2.1
• DC-DC Converter: See B.22	DDC_A	◯	◯	Chapter 19
M9000 Backplane: See B.21	BP_B	—	—	Section 20.2.1
PSU Backplane (For M9000 Server) B.23	PSUBP_A	—	—	Section 20.2.2
PSU Backplane (For M8000 Server) B.23	PSUBP_B	—	—	Section 20.2.2

TABLE B-1 FRU Components of High-end Server Models *(Continued)*

Name:	Abbreviation	Active replacement	Hot replacement	Replacement procedure
FAN Backplane (For M9000 Server) B.24	FANBP_A	—	—	Section 20.2.3
FAN Backplane (For M9000 Server) B.24	FANBP_B	—	—	Section 20.2.3
FAN Backplane (For M8000 Server) B.24	FANBP_C	—	—	Section 20.2.3
Media Backplane: See B.25	MEDBP	—	—	Chapter 22
Switch Backplane: See B.26	SWBP	—	—	Chapter 23
Rack-mountable dual power feed option: See B.20	RDPF	—	—	Chapter 24
Dual power feed option: See B.19	—	—	—	
Three-phase power feed option: See B.19	—	—	—	

Note – *1 It uses the DR function. It is available in the configuration in which all the XSB on the target FRU can be detached by DR function.

Note – *2 It uses the PHP function. Depending on the PCI card usage, it requires the multi-path setting.

Note – *3 Active replacement of an IOU onboard device card (IOUA) is not possible, but active replacement of an I/O unit (IOU) as a whole is possible.

Note – *4 In case of the unit error, replace one unit at a time. When N+1 redundancy is lost, cold replacement will be necessary.

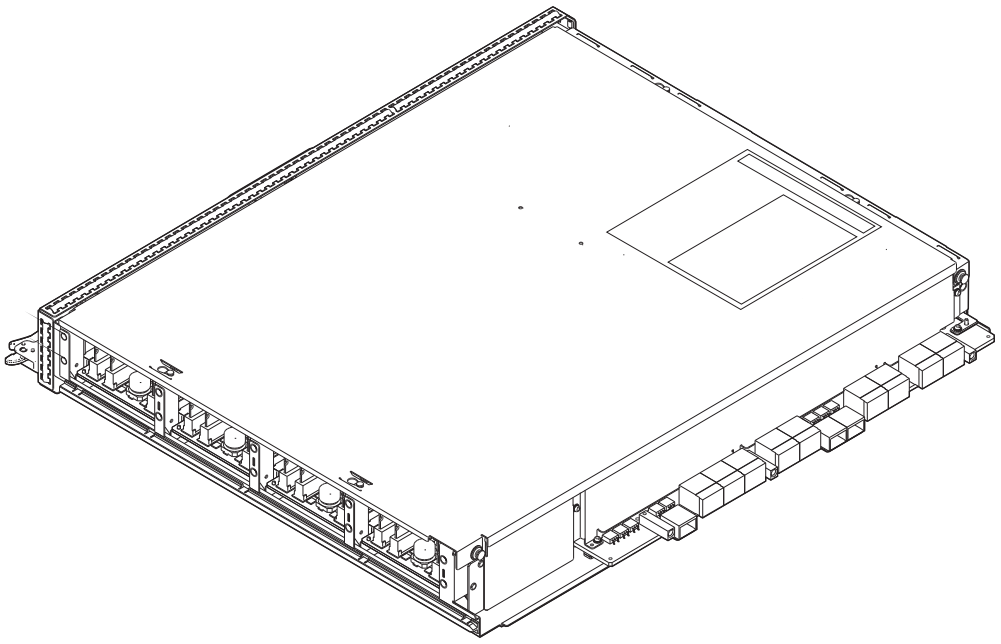
Note – *5 In case of the unit error, replace one unit at a time.

B.1 CPU Memory Board Unit

The CPU memory board unit (CMU) consists of a CPU memory board (CMB) with a DC-DC converter mounted, a memory, and a CPU module (CPUM). It can be combined with an I/O unit to configure a system (domain).

FIGURE B-1 shows the CMU.

FIGURE B-1 CPU Memory Board Unit (CMU)



The CMU has the following characteristics.

- Active maintenance of CMUs is possible using the DR function.
- In CMU maintenance, you can replace the target in units of CMU as a whole, CPU module, or memory. To perform active maintenance, you need to pull out the CMU from the system before replacing the target.
- A CMU can be installed or removed using the DR function during system operation.
- A dedicated LSI is mounted for system control (SC) and memory access control (MAC).

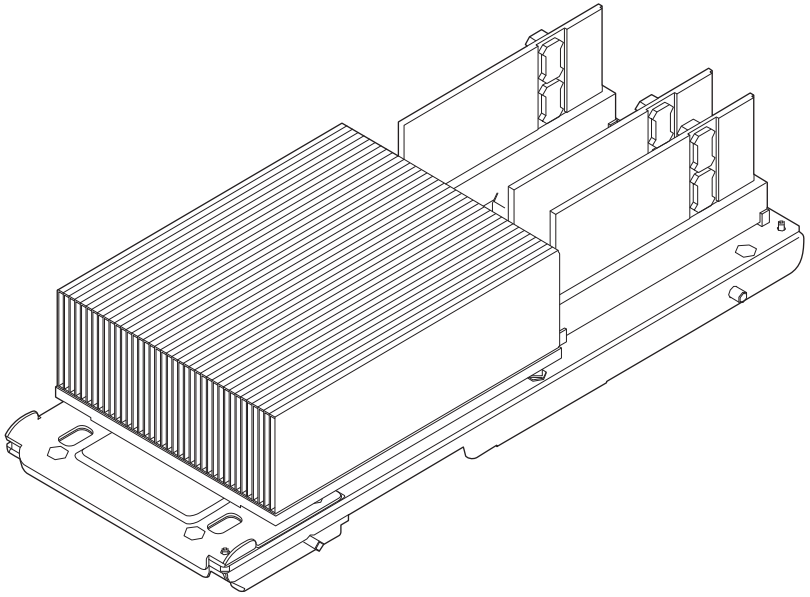
- For the bus connecting SC and SC as well as SC and crossbar unit, a high-speed link is used.
- For the bus connecting SC and MAC as well as SC and CPU, a high-speed link is used.
- For the memory, DIMM is used.
- The CMU has a label bearing the printed component number and manufacture's serial number.

B.2 CPU Module

CPU module consists of CPU and DDC. Up to four CPU modules can be mounted on a CMU. There are four types of CPU modules.

FIGURE B-2 shows the CPU module.

FIGURE B-2 CPU Module



The CPU module has the following characteristics.

- Active maintenance of CPU modules is possible using the DR function.
- To perform active maintenance, you need to pull out the CMU from the system before replacing the target CPU module.

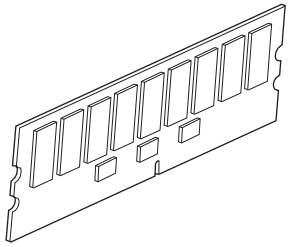
- A dedicated LSI for CPU is mounted.
- One CPU chip is mounted on a CPU module. In case of SPARC 64 VI processor, one CPU chip has two CPU cores, each of which has two threads. This means four threads per CPU module.
  In case of SPARC 64 VII processor, one CPU chip has four CPU cores, each of which has two threads. This means eight threads per CPU module.
  A thread is a component of a CPU that can execute threads. When viewed from Solaris OS, one thread is seen as one CPU.
- The performance difference between four types of CPU module is as follows.
  - In case of SPARC64 VI processor:
    2.28 GHz, L2 cache 5M bytes/2.4 GHz, L2 cache 6M bytes
  - In case of SPARC64 VII processor:
    2.52 GHz, L2 cache 6M bytes/2.88 GHz, L2 cache 6M bytes
- For the bus connecting CPU and SC, a high-speed link is used.
- The CPU module has a label bearing the printed component number and manufacture's serial number.

B.3 Memory

The type of memory used is DIMM.

FIGURE B-3 shows the memory.

FIGURE B-3 Memory



The memory has the following characteristics.

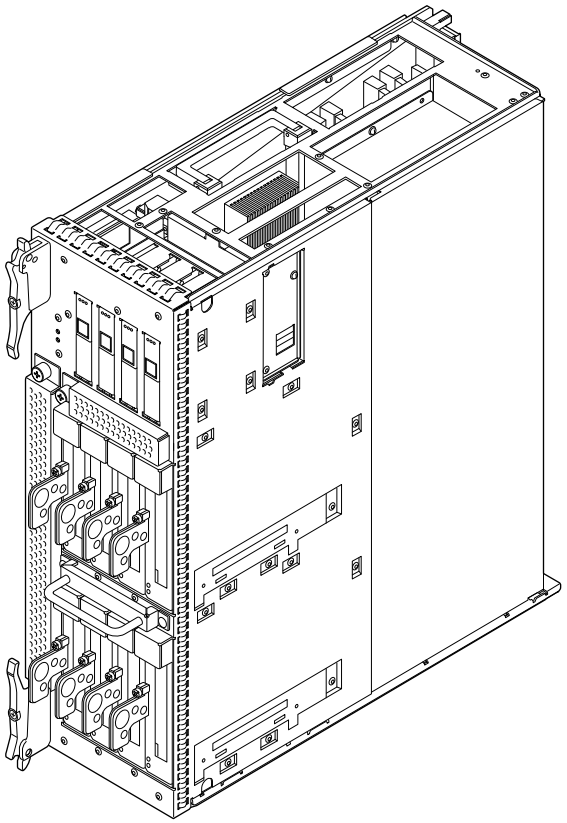
- Active maintenance of memory is possible using the DR function.
- Maintenance or installation of a DIMM module involves removing or installing a CMU.
- The category of the DIMM as specified by capacity and type is as follows:
  - DIMM-1GB
  - DIMM-2GB
  - DIMM-4GB
  - DIMM-8GB
- Depending on the DIMMs used, the label format of component numbers and serial numbers differs.

B.4 I/O Unit

An I/O Unit (IOU) consists of an I/O board (IOB) with two types of control LSIs and a DDC mounted, an HDD, and a PCI cassette. An IOU can be combined with a CMU to configure a system (domain).

FIGURE B-4 shows the IOU.

FIGURE B-4 I/O Unit (IOU)



The IOU has the following characteristics.

- Active maintenance of IOUs is possible using the DR function.
- Active replacement of a failed IOU during system operation is possible using the DR function.

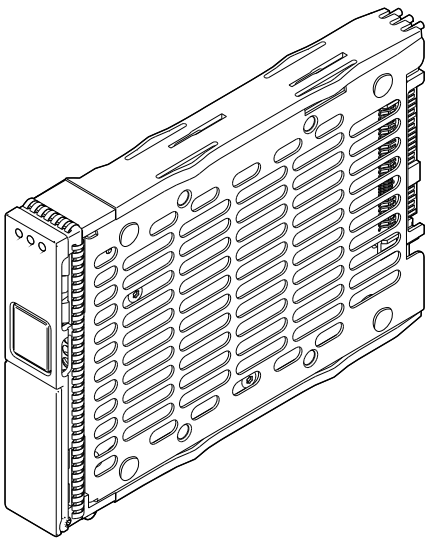
- An IOU can be added or removed using the DR function during system operation.
- Active maintenance of PCI slots is possible using the PHP function.
- The IOU has eight PCI slots with PCI cassettes mounted. PCI cards can be mounted on PCI cassettes. Up to four HDDs (2.5 inch with SAS interface) can be mounted on an IOU.
- Up to eight PCI-Express short cards can be mounted. If an IOU onboard device card (IOUA) is mounted instead of a PCI-Express short card, such units as the internal hard disk drive (HDD), internal CD-RW/DVD-RW drive unit, and tape drive unit can be connected. Also, if a link card is mounted, the external I/O expansion unit can be cable-connected to the SPARC Enterprise servers, enabling more PCI cards to be mounted.
  - Even-number slots (#0, #2, #4, #6): PCI-Express short card or IOUA
    Only an IOUA card in slot #0 or #4 can control up to two internal HDDs.
  - Odd-number slots (#1, #3, #5, #7): PCI-Express short card or link card
- A dedicated LSI is used for the system control.
- For the bus connecting the control portion and crossbar unit, a high-speed link is used.
- PCI-Express interface is being used.
- The IOU has a label bearing the printed component number and manufacture's serial number.

B.5 Hard Disk Drive

The hard disk drive (HDD) is mounted on an IOU. Up to four HDDs can be mounted on an IOU.

FIGURE B-5 shows the HDD.

FIGURE B-5 Hard Disk Drive (HDD)



The HDD has the following characteristics.

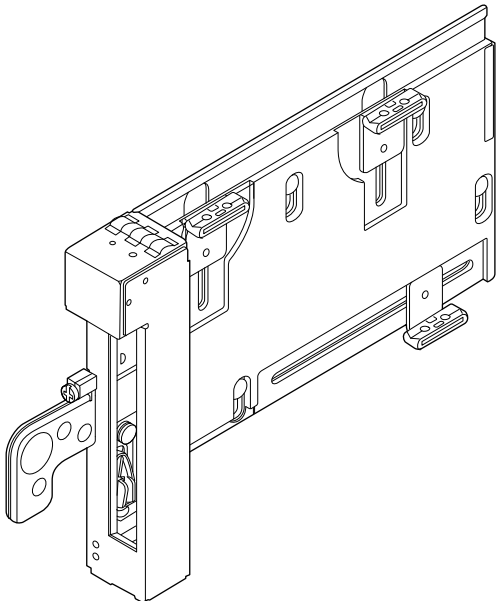
- Active replacement of a failed HDD during system operation is possible.
- Active installation of HDDs during system operation is possible.
- It allows mounting of a 2.5 inch HDD with an SAS interface.
- Depending on the HDDs used, the label format of component numbers and serial numbers differs.

B.6 PCI Cassette

The PCI cassette is an adapter used to mount different types of PCI cards in an IOU. A cassette for PCI Express Short card (PCICS) is also available.

FIGURE B-6 shows the PCICS.

FIGURE B-6 PCI Express Short card cassette (PCICS)



The PCI cassette has the following characteristics.

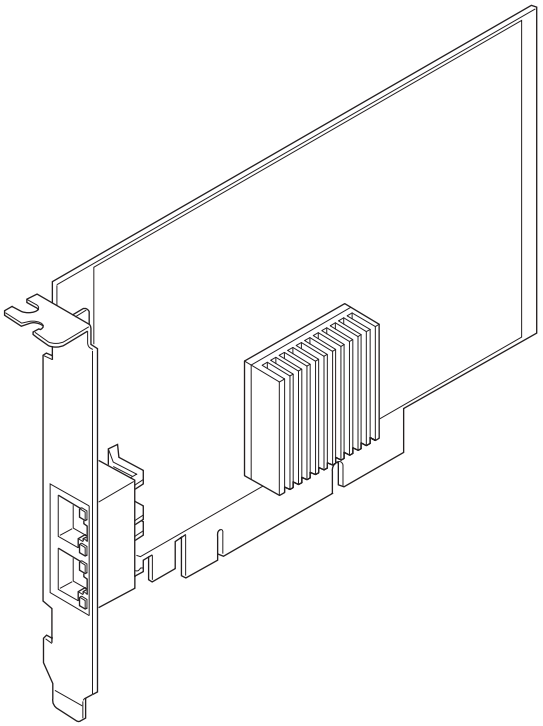
- Active maintenance of PCICSs is possible using the PHP function.
- Active installation or removal of PCI cards (including link cards) is possible using the PHP function.
- A PCICS can have a short card with the PCI-Express interface mounted.
- A PCICS has a label bearing the printed component number and manufacturer's serial number.

B.7 IOU Onboard Device Card

The IOU onboard device card (IOUA) is an option for mounting CD-RW/DVD-RW drive units or tape drive units in SPARC Enterprise server cabinets. Connect to the CD-RW/DVD-RW drive unit or tape drive unit is controlled by IOUA. The IOUA to control these devices must be mounted on PCI slot 0 or 4 of the IOU.

FIGURE B-7 shows the IOUA.

FIGURE B-7 IOU Onboard Device Card (IOUA)



The IOUA has the following characteristics.

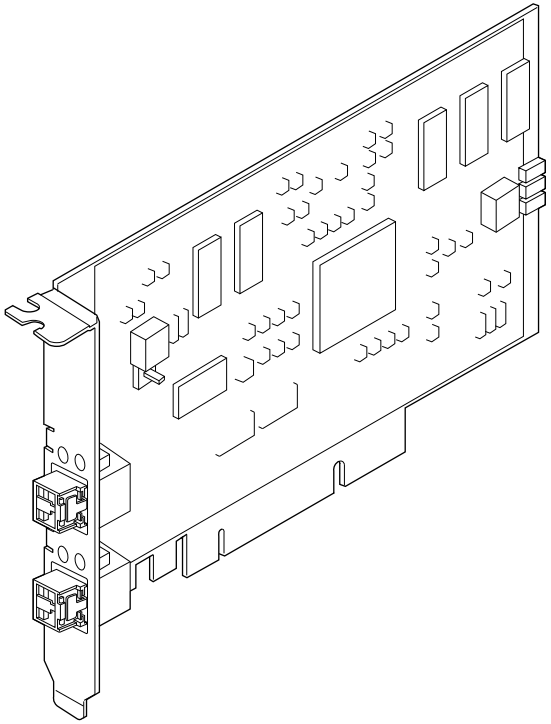
- Hot replacement of an IOUA is possible.
- SAS interface is not supported.

B.8 Link Card (External I/O Expansion Unit Connection Card)

The external I/O expansion unit connection card includes two link cards. One link card is mounted on the host server. The other link card is mounted on the I/O boat. The cards are supplied with a cable for connection.

FIGURE B-8 shows the PCIB-EX.

FIGURE B-8 External I/O Expansion Unit Connection Card (PCIB-EX)



The PCIB-EX has the following characteristics.

- Active maintenance of a PCIB_EX is possible using the PHP function.
- Active installation or removal of PCI cards (including link cards) is possible using the PHP function.
- The maximum cable length for a card is 25 m.

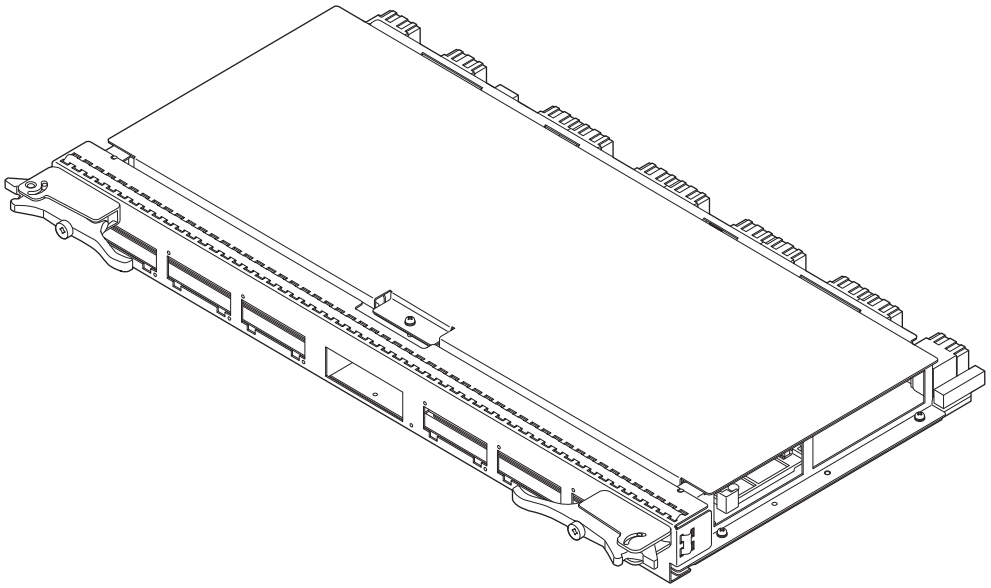
B.9 Crossbar Unit

A crossbar unit (XBU: formal abbreviation is XBU_B) is mounted only in the SPARC Enterprise M9000 server. The XBU consists of a connector and a crossbar switch (XB). The connector is used to physically connect a CMU and IOU, and the XB switches logical connections and controls data transfer between the CMU and IOU.

Up to eight XBUs can be mounted in a cabinet.

FIGURE B-9 shows the XBU_B.

FIGURE B-9 Crossbar Unit (XBU_B)



The XBU has the following characteristics.

- Only cold replacement is available for the XBU.
- In the SPARC Enterprise M9000 server (with an expansion cabinet) model, control over the expansion cabinet is done by connecting the XBUs of both base cabinet and expansion cabinet with cables.

- The XBU has a normal mode and a degraded mode. In normal mode, all eight sets operate; and in degraded mode in which a failure has occurred, the four sets containing the failed set are disconnected, and operation continues with the remaining four normal sets. If an XB fails, the system is shut down to disconnect the four sets including the failed XB, and it is then automatically recovered.
- A dedicated LSI chip is used for the crossbar switch (XB).
- For the bus connecting CMU and XBU, a high-speed link is used.
- For the bus connecting the IOU and XBU and the bus connecting XBUs of the base cabinet and expansion cabinet, a high-speed link is being used.
- The XBU has a label bearing the printed component number and manufacture's serial number.

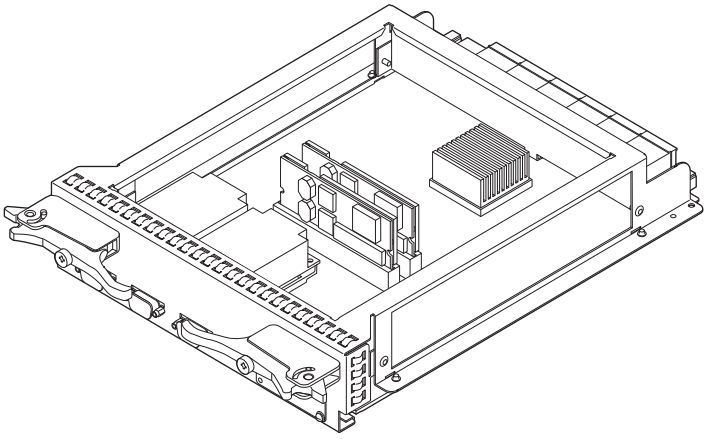
B.10 Clock Control Unit

A clock control unit (CLKU: formal abbreviation is CLKU_B) is mounted only in the SPARC Enterprise M9000 server, and it supplies clock signals to a CMU and crossbar unit (XBU). Furthermore, in the SPARC Enterprise M9000 server with the expansion cabinet, both CLKUs in the base cabinet and expansion cabinet are connected to enable each to supply clock signals to the other cabinet.

In the M8000, two LSI chips for clock signals instead of the CLKU are mounted on the backplane.

FIGURE B-10 shows the CLKU_B.

FIGURE B-10 Clock Control Unit (CLKU_B)



The CLKU has the following characteristics.

- Only cold replacement is available for CLKU_B.
- A dedicated LSI chip is used for clock control.
- CMU and XBU are supplied with the standard clocks, respectively.
- The CLKU has a label bearing the printed component number and manufacture's serial number.

B.11 XSCF Unit

XSCF unit (XSCFU: eXtended System Control Facility unit) controls the system.

Two types of XSCFU are available: the XSCFU_B for the high-end servers and XSCFU_C for the expansion cabinet of the M9000. XSCFU_B has a connector for cable connection to XSCFU_C provided for expansion cabinet use. XSCFU_C has no functions for controlling the system, but it provides an interface for passing the status of each unit in the expansion cabinet to XSCFU_B.

FIGURE B-11 and FIGURE B-12 show the XSCFU respectively.

FIGURE B-11 eXtended System Control Facility Unit (XSCFU_B)

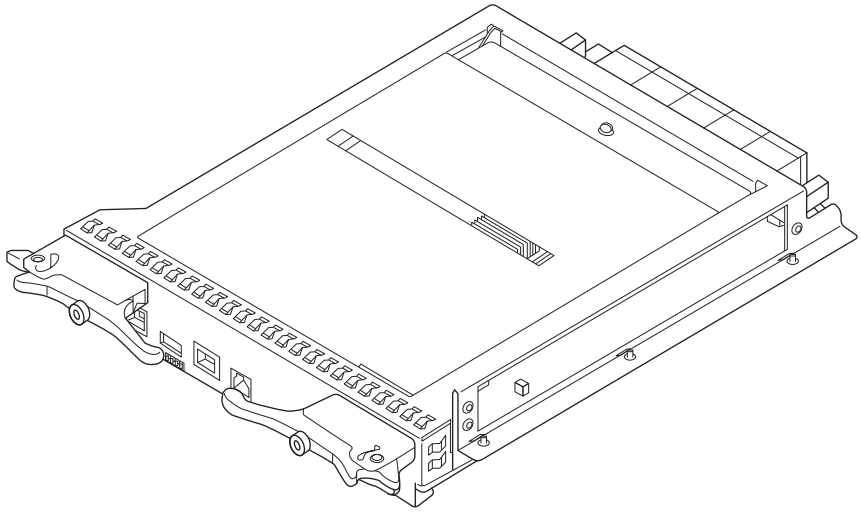
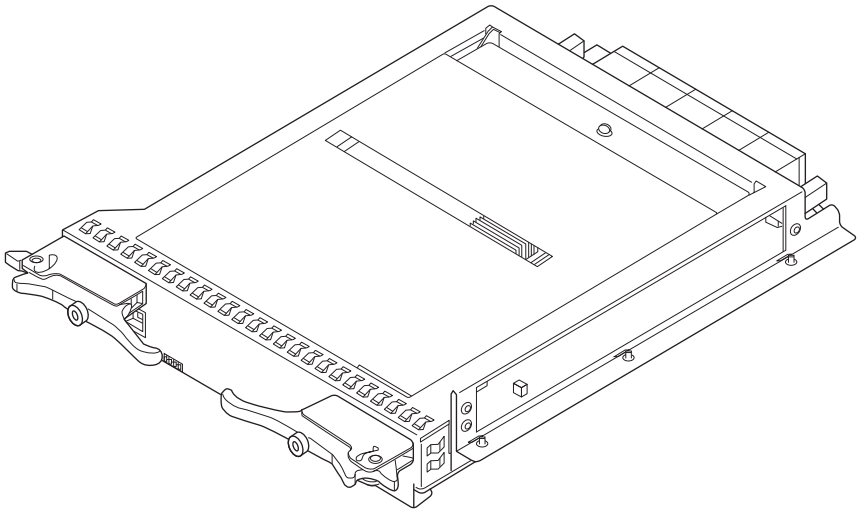


FIGURE B-12 eXtended System Control Facility Unit (XSCFU_C)



XSCFU has the following characteristics.

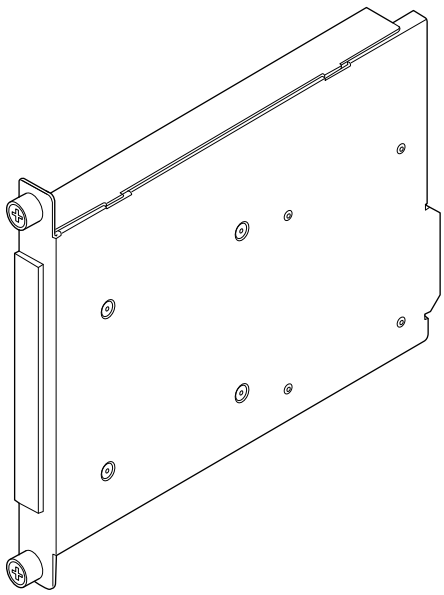
- The XSCFU has a duplicated configuration as the standard specification, allowing hot replacement of a failed XSCFU during system operation.
- XSCFU is the central control unit of the system and has the following functions:
  - It controls each unit.
  - It works as the console of each domain by using the TTY communication protocol.
  - It communicates with each domain by using the command-line interface.
  - It manages the device information.
  - It supports the browser-based user interface (BUI) function called XSCF Web.
  - It allows connection to maintenance terminals.
  - It supports remote maintenance services.
  - It allows interlocking control for power supply and cluster control by using a remote cabinet interface (RCI).
- The XSCFU has a label bearing the printed component number and manufacture's serial number.

B.12 CD-RW/DVD-RW Drive Unit

The CD-RW/DVD-RW drive unit (DVDU) can be mounted on each cabinet. One for the M8000/M9000 with the base cabinet, and up to two for the M9000 with an expansion cabinet can be mounted. The CD-RW/DVD-RW drive unit is controlled by the optional IOU onboard device card (IOUA).

The CD-RW/DVD-RW drive unit is shown in FIGURE B-13.

FIGURE B-13 CD-RW/DVD-RW Drive Unit (DVDU)



The CD-RW/DVD-RW drive unit has the following characteristics.

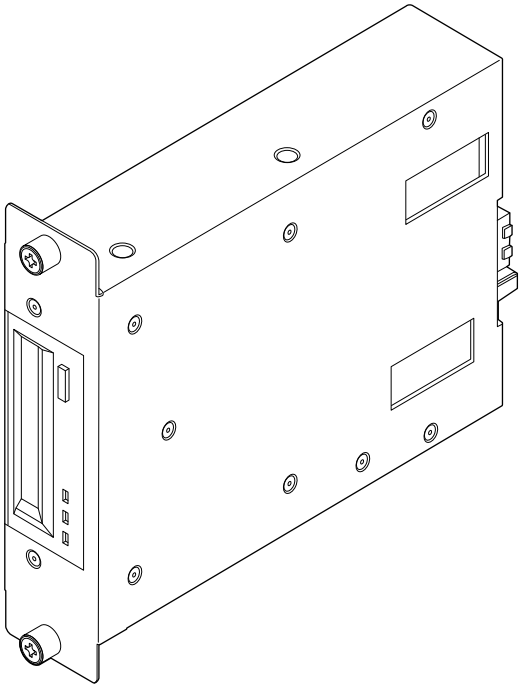
- Active replacement or hot replacement of CD-RW/DVD-RW drive units is possible.
- CD-RW/DVD-RW drive unit is mounted with the slim type CD-RW/DVD-RW Unit by default.
- XSCF command can switch the domain which can use the CD-RW/DVD-RW drive unit.
- The CD-RW/DVD-RW drive unit has a label bearing the printed component number and manufacture's serial number.

B.13 Tape Drive Unit

Tape drive unit (TAPEU) is optional and can be mounted on each cabinet. One for theM8000 /M9000 with the base cabinet, and up to two for the M9000 with an expansion cabinet can be mounted. TAPEU is controlled by the optional IOU onboard device card (IOUA).

The TAPEU is shown in FIGURE B-14.

FIGURE B-14 Tape Drive Unit (TAPEU)



Tape drive unit has the following characteristics.

- Active replacement or hot replacement of tape drive units is possible.
- Active installation of tape drive units during system operation is possible.
- Tape drive unit supports DAT72 (SATA interface).
- By changing the switch setting on the tape drive unit, it can be used by each domain.

- The tape drive unit has a label bearing the printed component number and manufacture's serial number.

B.14 Operator Panel

The operator panel (OPNL) allows the operation of the high-end server and the display of condition. The OPNL is mounted on the front door. With the M9000, the OPNL is mounted only on the base cabinet.

The front and rear views of the OPNL are shown in FIGURE B-15 and FIGURE B-16 respectively.

FIGURE B-15 Front View of the Operator Panel (OPNL)

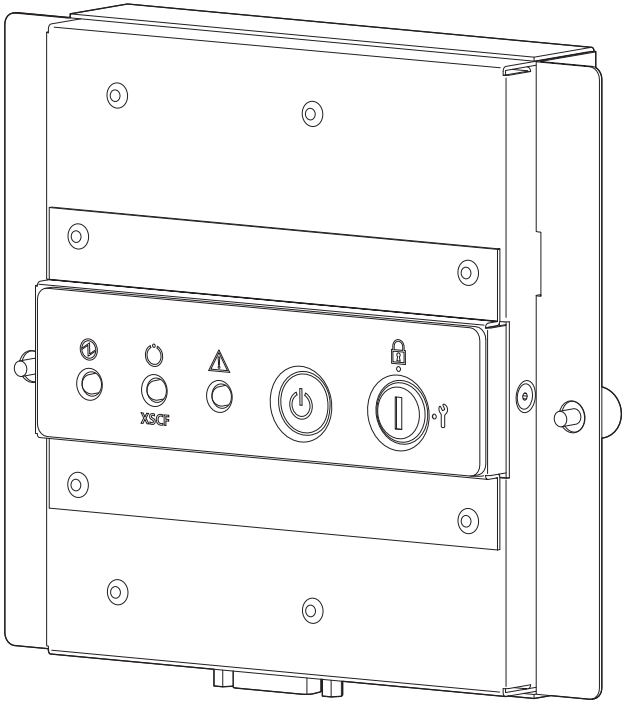
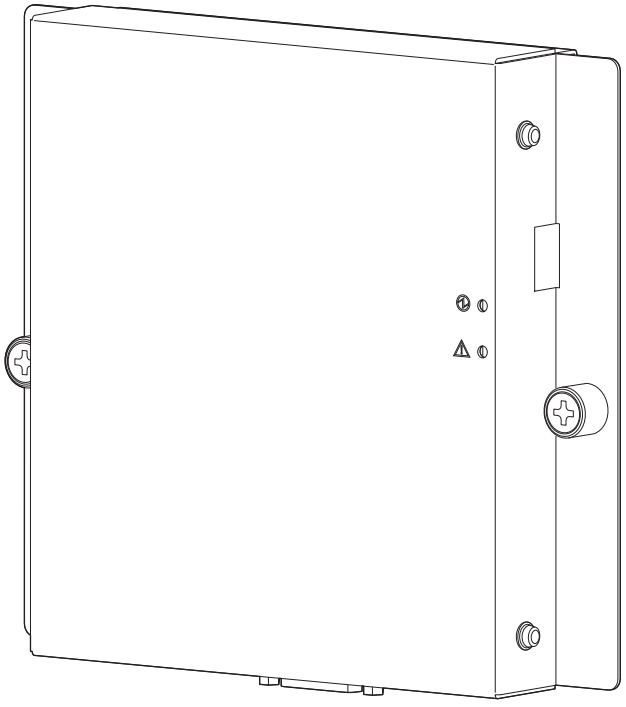


FIGURE B-16 Rear View of the Operator Panel (OPNL)



OPNL has the following characteristics.

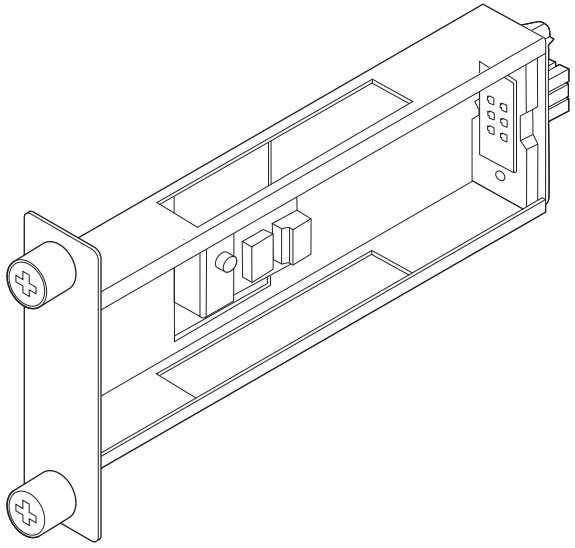
- Only cold replacement is available for the OPNL.
- The following switches are mounted on the OPNL to enable operation of the server.
  - POWER switch to turn on the power.
  - Mode switch to control the POWER switch
- The LED on the front of the OPNL displays the condition of the server. The LED of the rear of the OPNL displays the status of OPNL itself.
- On OPNL, EEPROM is mounted to store the device identification information and the user setting information. These sets of information are also stored in XSCFU.
- The OPNL has a label bearing the printed component number and manufacture's serial number.

B.15 Sensor Unit

The sensor unit (SNSU) monitors the intake-air temperature and humidity. In the M9000, this unit is mounted only on a base cabinet. When the output value of the sensor exceeds the reference value, XSCF issues an alarm to the system.

FIGURE B-17 shows the SNSU.

FIGURE B-17 Sensor Unit (SNSU)



SNSU has the following characteristics.

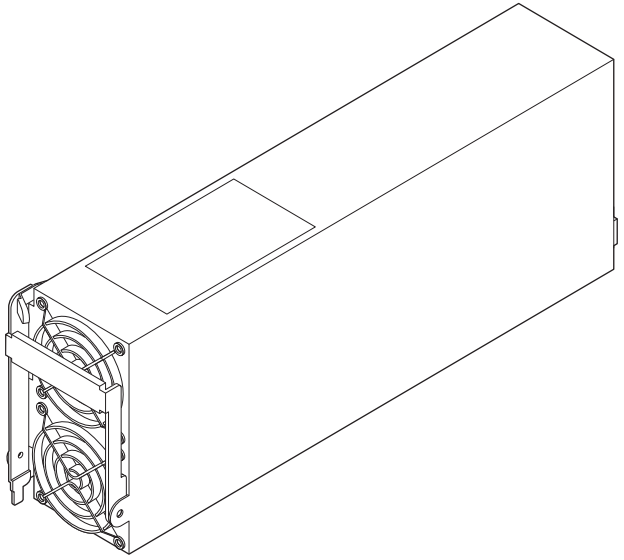
- Only cold replacement is available for the SNSU.
- Only the temperature sensor and the humidity sensor are mounted.
- Data processing such as A/D conversion is performed with the operator panel (OPNL).
- The SNSU has a label bearing the printed component number and manufacture's serial number.

B.16 Power Supply Unit

The power supply unit (PSU) receives AC 200 to 240 V, and supplies each unit of the SPARC Enterprise with DC48 V and 12 VL. When all CMUs and IOUs are mounted without the dual power feed option, nine units for the M8000, 15 units for the M9000 (base cabinet only) and 30 units for the M9000 (with expansion cabinet) will be mounted. The number of mounted units also vary with the system configuration.

The PSU is shown in FIGURE B-18.

FIGURE B-18 Power Supply Unit (PSU)



The PSU has the following characteristics.

- Because PSUs are normally operating in redundancy, active maintenance of a failed PSU during system operation is possible.
- The internal power factor correction (PFC) circuit secures the stable output and suppresses the harmonic current that adversely affects the environment.
- The current balancing function enables the concurrent operation of a large number of PSUs, allowing the redundant configurations.
- The PSU has a label bearing the printed component number and manufacture's serial number.

B.17 AC Section

AC section (ACS) is positioned at the input side of the power supply unit (PSU), to protect the system from electromagnetic interference (EMI).

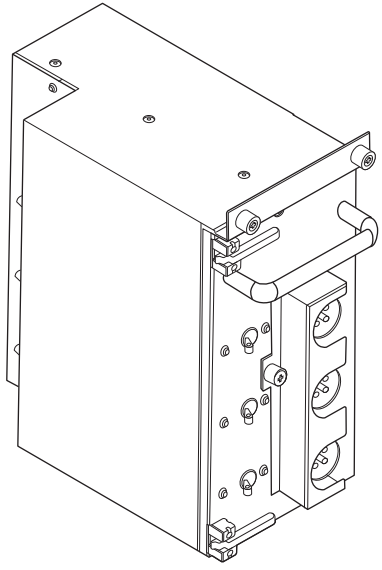
There are two types of ACS, ACS for M8000 and ACS for M9000. Both single-phase AC and three-phase AC types are available for both types.

ACS consists of a terminal strip for power input, a main line switch, and so on. Among the ACS, ACS_D is a unit for supplying the internal current to the three-phase power feed cabinet, which doesn't have a main line switch and the external connection.

FIGURE B-19, FIGURE B-20, FIGURE B-21, FIGURE B-22, FIGURE B-23, FIGURE B-24, FIGURE B-25, and FIGURE B-26 show the ACS.

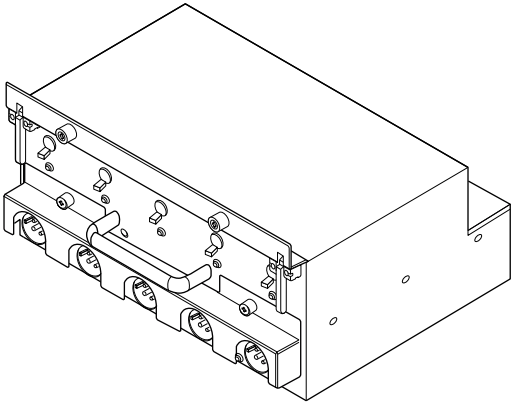
- The ACS_A is a single-phase power feed unit for the SPARC Enterprise M8000 server. This unit uses three power cords to receive power and distribute AC power to nine PSUs.

FIGURE B-19 AC Section (ACS_A)



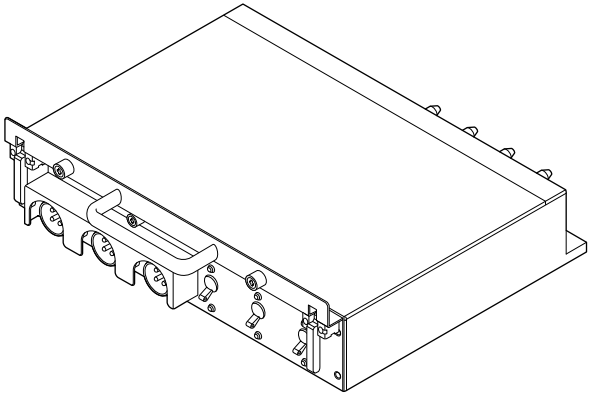
- The ACS_B is a single-phase power feed unit for the SPARC Enterprise M9000 server and the SPARC Enterprise M9000 server single-phase dual power feed cabinet (option). This unit uses five power cords to receive power and distribute AC power to 15 PSUs.

FIGURE B-20 AC Section (ACS_B)



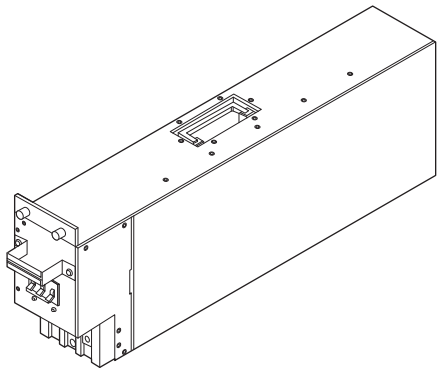
- The ACS_C is a single-phase power feed unit for the SPARC Enterprise M8000 server single-phase dual power feed cabinet (option). This unit uses three power cords to receive power and distribute AC power to nine PSUs.

FIGURE B-21 AC Section (ACS_C)



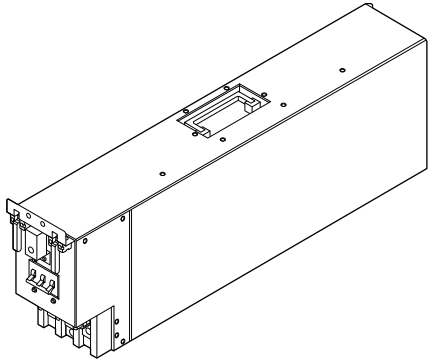
- The ACSTPH_A is a unit that receives three-phase (delta) power for the SPARC Enterprise M8000 server three-phase dual power feed cabinet and switches between three-phase and single-phase. This unit uses two power cables to receive power, switch from three-phase to single-phase current internally, and distribute AC power to 18 PSUs.

FIGURE B-22 AC Section (ACSTPH_A)



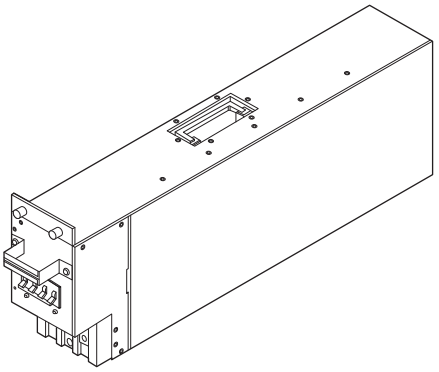
- The ACSTPH_B is a unit that receives three-phase (star) power for the SPARC Enterprise M8000 server three-phase dual power feed cabinet and switches between three-phase and single-phase. This unit uses two power cables to receive power, switch from three-phase to single-phase current internally, and distribute AC power to 18 PSUs.

FIGURE B-23 AC Section (ACSTPH_B)



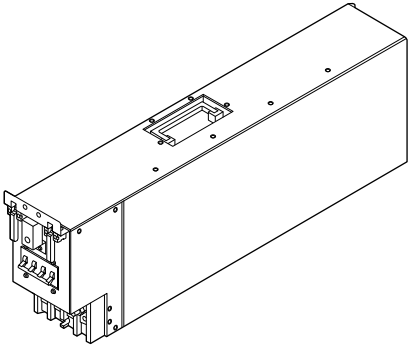
- The ACSTPH_C is a unit that receives three-phase (delta) power for the SPARC Enterprise M9000 server three-phase dual power feed cabinet and switches between three-phase and single-phase. This unit uses two power cables to receive power, switch from three-phase to single-phase current internally, and distribute AC power to 30 PSUs.

FIGURE B-24 AC Section (ACSTPH_C)



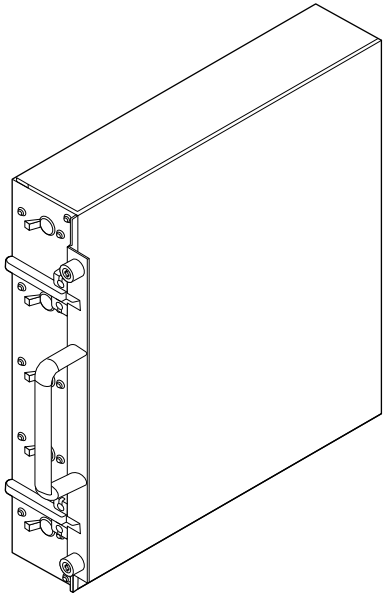
- The ACSTPH_D is a unit that receives three-phase (star) power for the SPARC Enterprise M9000 server three-phase dual power feed cabinet and switches between three-phase and single-phase. This unit uses two power cables to receive power, switch from three-phase to single-phase current internally, and distribute AC power to 30 PSUs.

FIGURE B-25 AC Section (ACSTPH_D)



- The ACS_D is an internal current power feed unit for the SPARC Enterprise M8000 server/SPARC Enterprise M9000 server three-phase dual power feed cabinet. This unit supplies single-phase current to the server. It does not use external cables.

FIGURE B-26 AC Section (ACS_D)



ACS has the following characteristics.

- Only cold replacement is available for the ACS.

B.18 FAN Unit

The FAN unit consists of two to three cabinet cooling FAN units. Two types of FAN unit are available: the FAN_A type, which is the common FAN unit for SPARC Enterprise, and the FAN_B type, which is the a dedicated FAN unit for the M8000.

FIGURE B-27 and FIGURE B-28 show the FAN unit.

FIGURE B-27 FAN Unit (FAN_A)

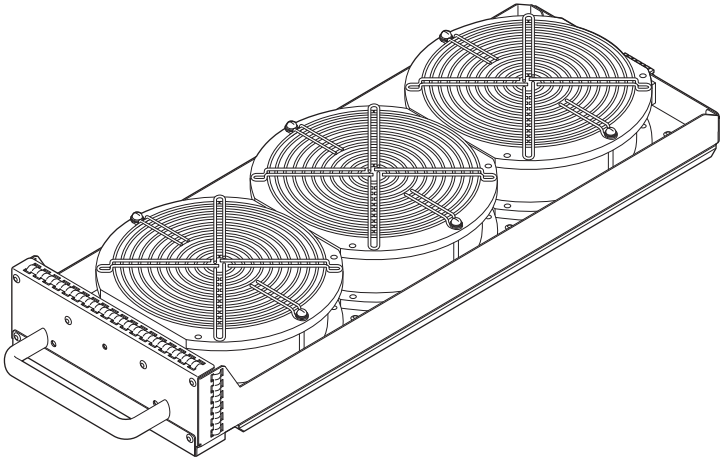
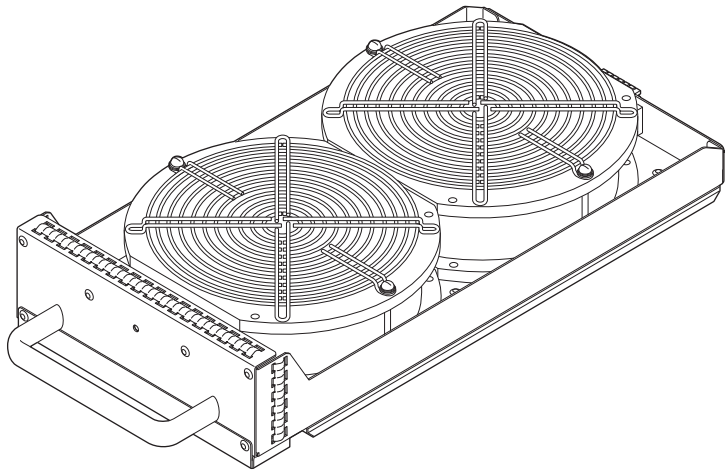


FIGURE B-28 FAN Unit (FAN_B)



The FAN unit has the following characteristics.

- Active maintenance of a failed FAN unit during system operation is possible.
- The FAN units are controlled by XSCF.
- Even if a FAN unit fails during system operation, the redundant FAN unit configuration ensures that system operation can continue.
- The FAN unit has a label bearing the printed component number and manufacturer's serial number.

B.19 Power Cabinet

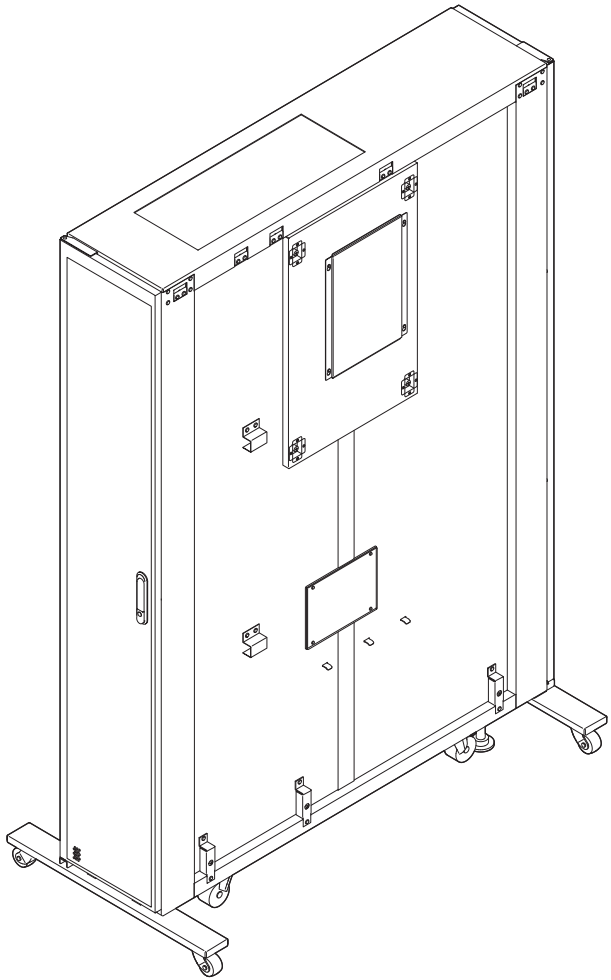
A dual power feeder (DPF) and a three-phase AC power feeder are mounted on the power cabinet. All of these are optional.

The dual power feeder receives its power supply from two independent external power sources, ensuring that, even if a failure occurs in one source, power is supplied to the system from the other source that in normal state. It supports both single-phase and three-phase AC.

The three-phase AC power feeder is required when the input power is three-phase AC.

The power cabinet is shown in FIGURE B-29.

FIGURE B-29 Power Cabinet



The power cabinet has the following characteristics.

- Only cold replacement is available for the power cabinet.
- It provides the mounting locations for all components of the dual power feeder (DPF) and the three-phase AC power feeder. There are no exclusive conditions for mounting.
- The power cabinet has a label bearing the printed component number and manufacture's serial number.

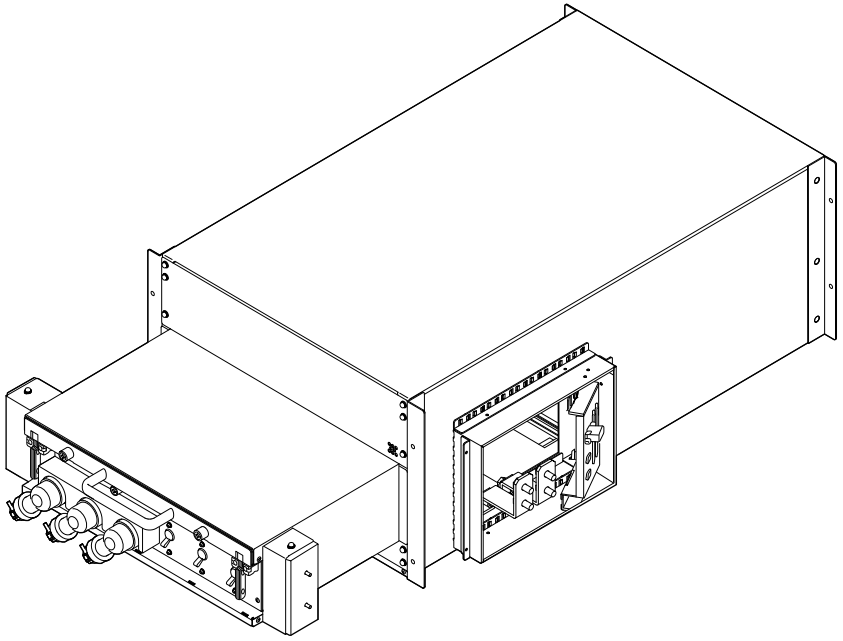
B.20 Rack-mountable Dual Power Feed

Rack-mountable Dual Power Feed (RDPF) is a dedicated option for M8000.

The Rack-mountable Dual Power Feed receives its power supply from two independent external power sources, ensuring that, even if a failure occurs in one source, power is supplied to the system from the other source that in normal state. It is applicable only for single-phase AC input. For three-phase AC power input, a power cabinet is required.

The Rack-mountable Dual Power Feed is shown in FIGURE B-30.

FIGURE B-30 Rack-mountable Dual Power Feed (RDPF)



The Rack-mountable Dual Power Feed has the following characteristics.

- Only cold replacement is available for the rack-mountable dual power feed.
- It provides the mounting locations for all components of the dual power feeder (DPF) and the three-phase AC power feeder. There are no exclusive conditions for mounting.
- The Rack-mountable Dual Power Feed has a label bearing the printed component number and manufacture's serial number.

B.21 Backplane

The backplane (BP) is a printed circuit board (PCB) that has connectors and PC board used to interconnect the cabinet-mounted units. There are two types of BP for SPARC Enterprise available: namely, the BP_A for the M8000 and the BP_B for the M9000. The BP_A makes connections among CMU, IOU, XSCFU and DDC_A (See next section). The BP_B makes connections among CMU, IOU, XSCFU, CLKU and XBU.

The BP is shown in FIGURE B-31 and FIGURE B-32.

FIGURE B-31 Backplane (BP_A)

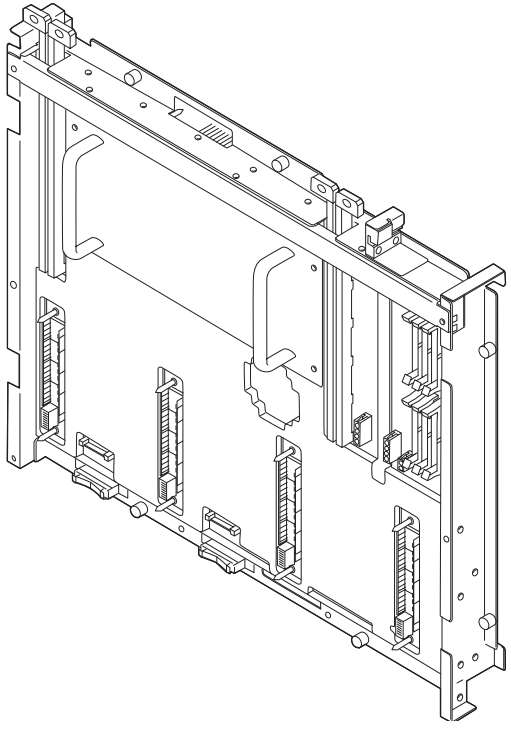
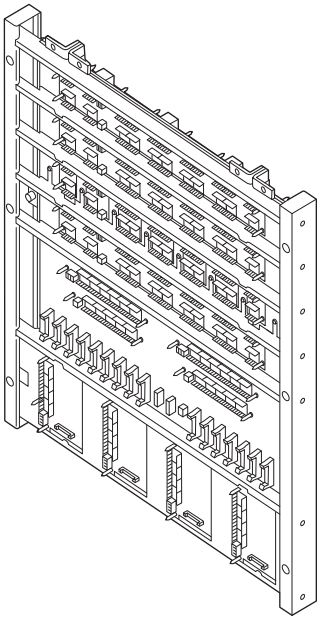


FIGURE B-32 Backplane (BP_B)



The BP has the following characteristics.

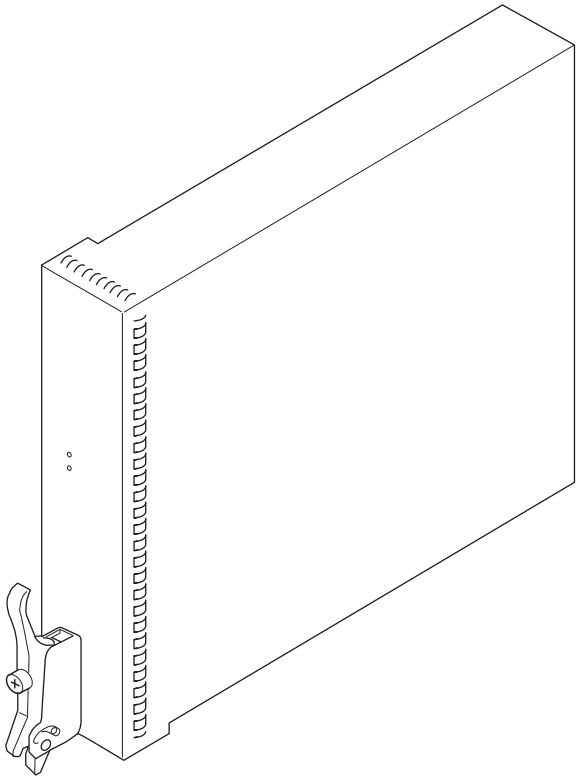
- Only cold replacement is available for the BP.
- Since there are no crossbar units for the M8000, such electronic devices as LSI for crossbar switches (XB) are mounted on BP_A.
- BP_B, which consists of connectors and mechanical components only, has no electronic devices.
- The BP for SPARC Enterprise has a label bearing the printed component number and manufacture's serial number.

B.22 DDC

DC-DC converter (DDC_A) supplies DC power to electronic components mounted on the backplane (BP_A) for M8000. DDC_A receives 48 VDC and 12 VL and outputs 1.0 VDC, 1.8 VDC, and 3.3 VL.

The DDC_A is shown in FIGURE B-33.

FIGURE B-33 DC-DC Converter (DDC_A)



DDC_A has the following characteristics.

- Because DDC_As are normally operating in redundancy, active maintenance or hot maintenance of a failed DDC_A during system operation is possible.
- The current balancing function enables concurrent redundant operations.
- The DDC_A has a label bearing the printed component number and manufacture's serial number

B.23 PSU Backplane

PSU backplane (PSUBP) is a PCB that has a connector for interconnecting multiple power supply units (PSU) concurrently operated. There are two types of PSUBP, namely the PSUBP_A commonly used for all SPARC Enterprise and the PSUBP_B for the M8000 only.

The PSUBP is shown in FIGURE B-34 and FIGURE B-35.

FIGURE B-34 PSU Backplane (PSUBP_A)

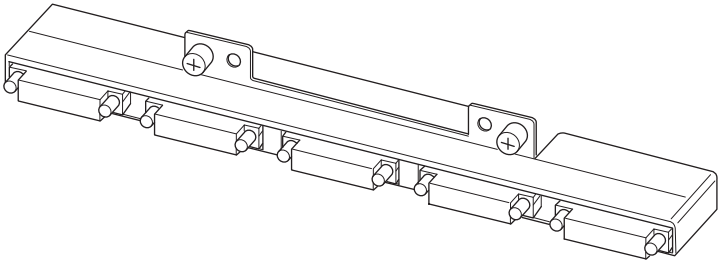
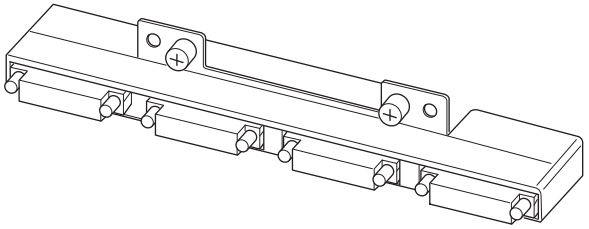


FIGURE B-35 PSU Backplane (PSUBP_B)



The PSUBP has the following characteristics.

- Because the PSUBP is a built-in unit in the cabinet, only cold replacement is available for the PSUBP.
- The PSUBP connects the output of PSU to each unit through system backplane (BP_A or BP_B).
- PUSBP_A allows connection to up to five PSUs.
- The PUSBP_B enables connection to up to four PSUs.
- The PSUBP has a label bearing the printed component number and manufacture's serial number.

B.24 FAN Backplane

The FAN backplane (FANBP) is a PCB that has a connector for connecting multiple FAN units (FAN_A or FAN_B). Three types of FANBP are available: the FANBP_C for the M8000, and FANBP_A and FANBP_B for the M9000.

FIGURE B-36, FIGURE B-37, and FIGURE B-38 show the FANBP.

FIGURE B-36 FAN Backplane (FANBP_A)

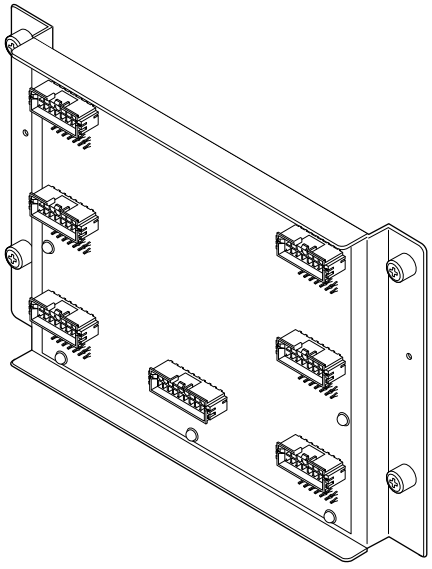


FIGURE B-37 FAN Backplane (FANBP_B)

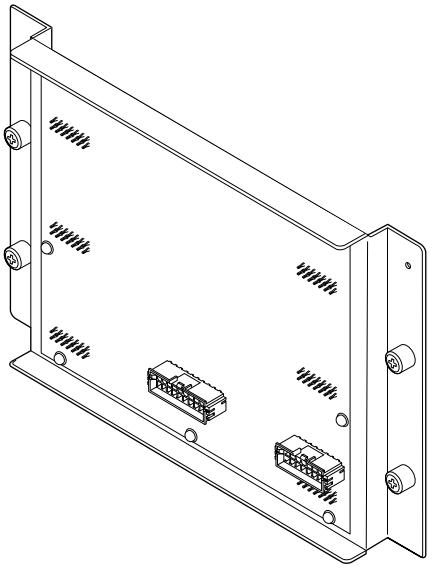
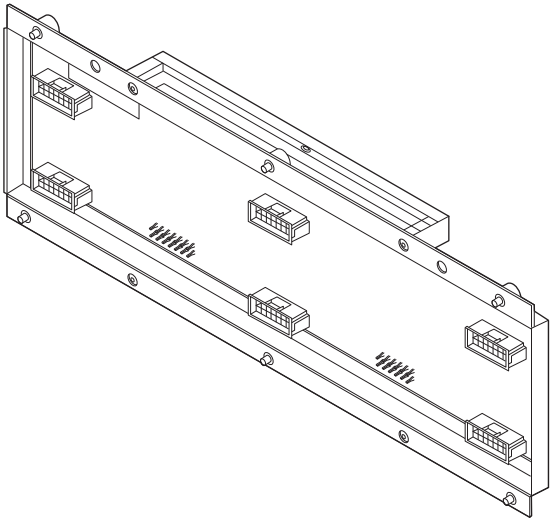


FIGURE B-38 FAN Backplane (FANBP_C)



FANBP has the following characteristics.

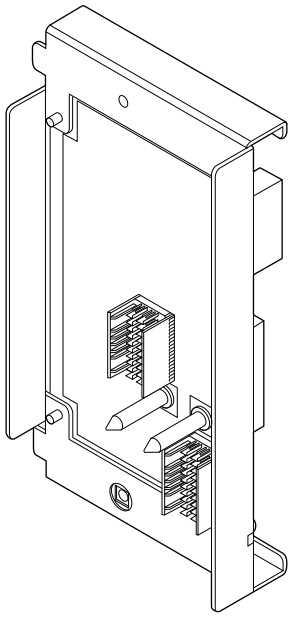
- Because the FANBP is a built-in unit in the cabinet, only cold replacement is available for the FANBP.
- FANBP connects FAN unit to the cabinet.
- Up to 10 FAN units can be mounted on FANBP_A, and up to six FAN units can be mounted on FANBP_B and FANBP_C each.
- The FANBP has circuits mounted for monitoring the fan rotation speed, switching between high/low speed, and controlling the CHECK LED. It is controlled by the XSCF.
- The FNBP has a label bearing the printed component number and manufacture's serial number.

B.25 Media Backplane

The Media backplane (MEDBP) is a PCB that has connectors for mounting the CD-RW/DVD-RW drive unit motherboard and the tape drive unit motherboard. On the CD-RW/DVD-RW drive unit motherboard and tape drive unit motherboard, the CD-RW/DVD-RW drive unit and the tape drive unit can be mounted, respectively. One MEDBP unit can be mounted on the M8000 and M9000 (base cabinet), and two units can be mounted on the M9000 (with expansion cabinet).

The MEDBP is shown in FIGURE B-39.

FIGURE B-39 Media Backplane (MEDBP)



The MEDBP has the following characteristics.

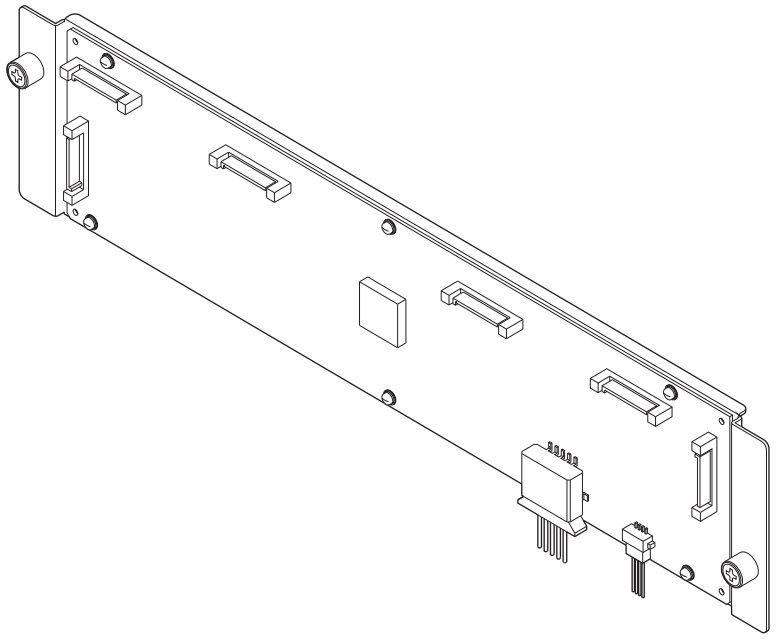
- Only cold replacement is available for MEDBP.
- The MEDBP has a label bearing the printed component number and manufacture's serial number.

B.26 Switch Backplane

Switch backplane (SWBP) is a PCB that has connectors to connect Media BP to multiple IOUs. The SWBP is a unit that switches between IOUs to set which IOU is to control the CD-RW/DVD-RW drive unit and the tape drive unit (TAPEU). One SWBP unit can be mounted on the M8000 and M9000 (base cabinet), and two units can be mounted on the M9000 (with expansion cabinet).

FIGURE B-40 shows the SWBP.

FIGURE B-40 Switch Backplane (SWBP)



SWBP has the following characteristics.

- Only cold replacement is available for the SWBP.
- Twelve ports of expander are mounted to control eight IOUs, one CD-RW/DVD-RW drive unit, and one tape drive unit.
- XSCF controls the settings for switching.
- It supplies the power (12 V, 5 V) to Media backplane (CD-RW/DVD-RW drive unit and tape drive unit).

- The SWBP has a label bearing the printed component number and manufacture's serial number.

CHAPTER C

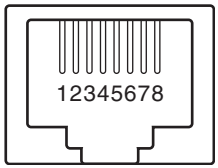
External Interface Specifications

This appendix describes the specifications of the connectors provided on the SPARC Enterprise server unit:

- "Serial Port" on page 1
- "UPC Port" on page 2
- "USB Port" on page 2
- "Connection Diagram for Serial Cable" on page 3

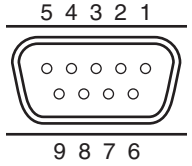
C.1 Serial Port

TABLE C-1 Serial Port

Setting	Pin No>	Signal name	Input/output	Description
	1	RTS	Output	Request to Send
	2	DTR	Output	Data Terminal Ready
	3	TXD	Output	Send Data
	4	GND	—	Ground
	5	GND	—	Ground
	6	RXD	Input	Receive Data
	7	DSR	Input	Data Set Ready
	8	CTS	Input	Clear to Send

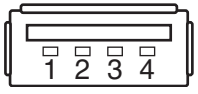
C.2 UPC Port

TABLE C-2 UPC Port

Setting	Pin No>	Signal name	Input/output	Description
	1	ER	Output	Equipment power-on report signal
	2	NC	—	Not connected
	3	NC	—	Not connected
	4	NC	—	Not connected
	5	SG	—	Ground
	6	*BPS	Input	UPS hardware error signal
	7	*BTL	Input	Battery end of discharge warning signal
	8	NC	---	Not connected
	9	*ACOFF	Input	Power failure detection signal

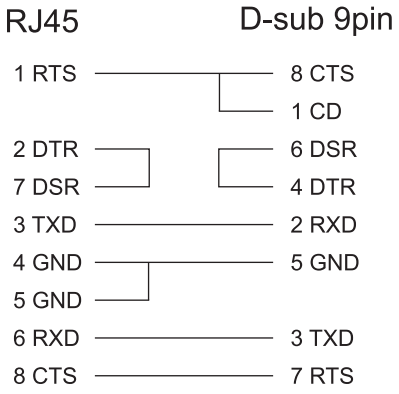
C.3 USB Port

TABLE C-3 USB Port

Setting	Pin No>	Signal name	Name	Abbreviation
	1	VBUS	Output	Power supply
	2	-DATA	Input/output	Data
	3	+DATA	Input/output	Data
	4	GND	—	Ground

C.4 Connection Diagram for Serial Cable

FIGURE C-1 Connection diagram for serial cable



APPENDIX **D**

UPS Controller

This appendix explains the UPS controller (UPC) that controls the uninterruptible power supply (UPS) unit.

D.1 Overview

The UPS is a unit to ensure a stable supply of power to the system even in the event of a power supply failure or a massive blackout.

When the UPC port on the server is connected to the UPS signal cable that has a UPC interface, if the UPS detects a power failure, it notifies the server of the failure so that the server can perform emergency shutdown processing. This stops the server safely.

D.2 Signal Cable

Use the shielded pair cable with the following specifications.

- Direct current resistance (roundtrip/pair): 400 W/km or less
- Cable length: Up to 10 m (33 ft.)

D.3 Configuration of Signal Lines

This section provides the signal definitions.

FIGURE D-1 shows the configuration of signal lines when the UPS is connected.

FIGURE D-1 Connection between the Server and UPS

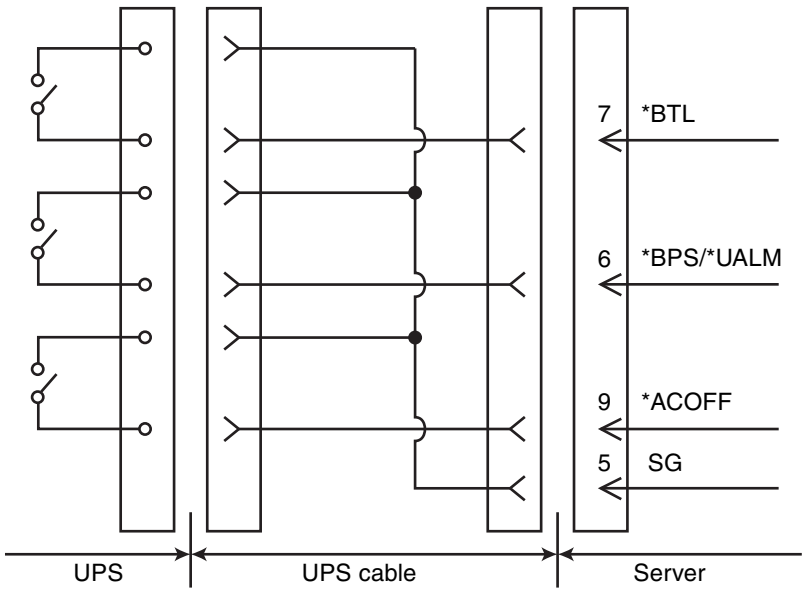


TABLE D-1 Signal Line Definitions

Signal name	Definitions	Pin number	Remarks
*BPS/*UALM	Indicates a UPS error.	6	Normal state: Off Abnormal state: On
*BTL	Indicates that the battery level of the UPS has decreased and warns that battery power will be unavailable after a certain period of time has elapsed.	7	Normal state: Off Abnormal warning: On (Note 1)

TABLE D-1 Signal Line Definitions *(Continued)*

Signal name	Definitions	Pin number	Remarks
*ACOFF	Indicates that a power failure has occurred in the commercial power supply connected to the UPS.	9	Normal state: Off Abnormal state: On (Note 2)
SG	Signal ground	5	
ER (Equipment Ready)	Indicates that the server is operating	1	Do not connect anything to this pin.

On: Indicates that the contact is closed.

Off: Indicates that the contact is open.

Note 1: Use a UPS that can normally supply power from the battery at least 10 to 60 seconds after *BTL is turned on.

Note 2: Use a UPS that can normally supply power from the battery within 2 seconds of a momentary commercial power interruption even if *ACOFF is not turned on.

D.4 Power Supply Conditions

TABLE D-2 and TABLE D-3 show the power supply conditions of the UPC interface.

D.4.1 Input Circuit

TABLE D-2 Input Power Supply Conditions

Signal name	Input conditions
*BPS/*UALM	No voltage relay contact
*BTL	Contact rating DC 12 V, 10 mA or greater (0.5 A maximum)
*ACOFF	Use of a gold-plated contact or reed relay is recommended.

Remarks: Limit the signal line chattering period to 1 ms.

D.4.2 Output Circuit

TABLE D-3 Output Power Supply Conditions

Signal name	Output conditions		
ER	Output voltage	VOH	DC 3.1 V (minimum)
		VOL	DC 0 - 0.4 V (maximum)
	Output current	IOH	-4 mA (maximum)
		IOL	4 mA (maximum)

D.5 UPS Cable

The UPS cable specifications are as follows:

- Connector shape

  D-SUB9 pin male (receptacle side: female)

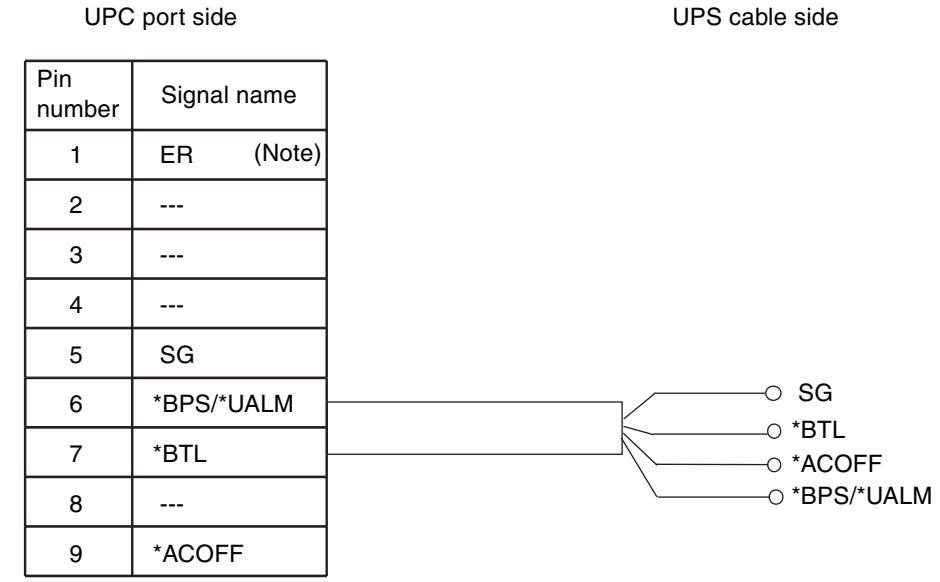
  DEU-9PF-F0

- Terminal array

  FIGURE D-2 shows the pin signals of the UPC port and UPS cable.

  Do not use any pin that is not defined (Pin 2, 3, 4, and 8 in FIGURE D-2). The pins on the cable side are as follows:

FIGURE D-2 Correspondence between the UPC Ports and the UPS Cable Pins



Note: Do not connect to the ER signal pin.

Remarks: If a UPS cable is required, it must be prepared separately. For details, contact your sales representative.

D.6 Connections

This section explains the connection between the UPC port and UPS.

- UPC#0 connects to UPS#0, and UPC#1 connects to UPS#1.
- Single power feed uses only UPC#0.
- Dual power feed uses UPC#0 and UPC#1.

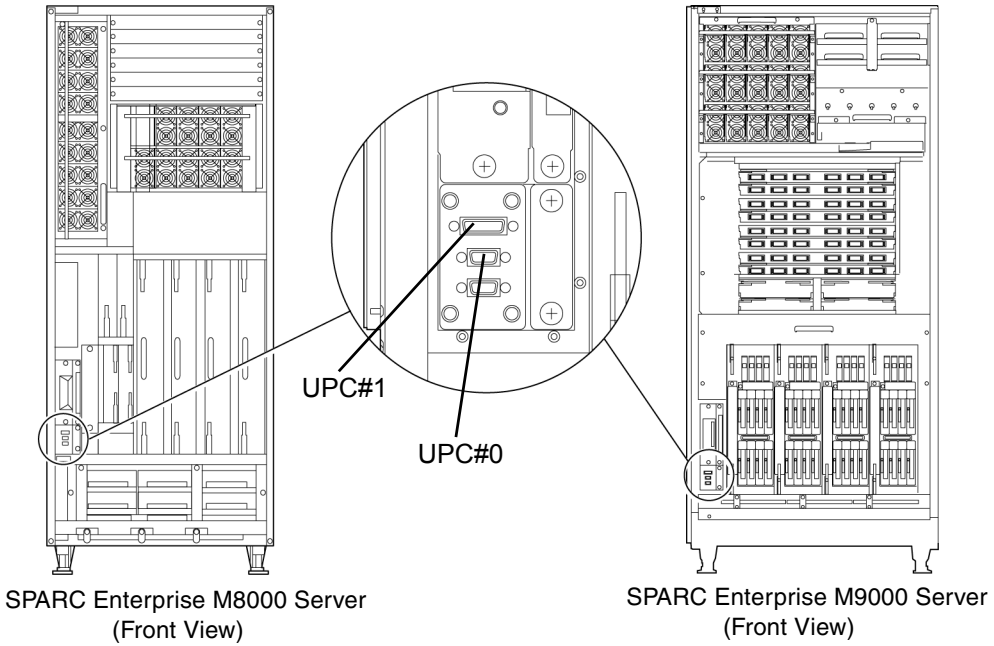
D.7 UPC Port

This chapter describes the location of the UPC port and the UPS connections.

- UPC#0 connects with UPS#0. UPC#1 connects with UPS#1.
- The single power feed uses UPC#0 only.
- The dual power feed option uses UPC#0 and UPC#1.

FIGURE D-3 show the location of the UPC port in the main unit.

FIGURE D-3 UPC Port of SPARC Enterprise M8000/M9000 Server



APPENDIX **E**

XSCF Unit Replacement When XCP 1040 or 1041 Is in the Server

The server must be updated to XCP 1050 or later.

Note – XCP 1050 or later cannot be downgraded to XCP 1040 or XCP 1041.

1. **Turn off all domains.**
2. **Turn the Mode switch to Service.**
3. **Turn off all main line switches.**
4. **Replace XSCFU#0 with spare material, and reconnect cables to XSCFU#0.**
5. **Extract XSCFU#1**
6. **Turn on all main line switches.**

   The following log may be recorded, but you can ignore it:

```
XSCF> showlogs error -r -M
Date: Oct 01 18:02:06 JST 2007      Code: 80008000-55000000-010a101f00000000
    Status: Alarm                   Occurred: Oct 01 18:02:06.604 JST 2007
    FRU: /XSCFU_B#1
    Msg: XSCF_B shortage
```

7. **Set the date and time on the XSCFU.**
8. **Turn off all main line switches.**
9. **Reinsert the XSCFU#1 that you extracted in** Step 5**.**
10. **Turn off all of the server's main line switches for 30 seconds.**
11. **After 30 seconds, turn the main line switches back on.**

12. **Wait until XSCF firmware reaches the ready state.**

    This can be confirmed when the READY LEDs of XSCFU_B#0 and XSCFU_B#1 remain lit.

13. **Log in to XSCFU#0 using a serial connection or LAN connection.**

14. **Confirm no abnormality occurred by using** showlogs error -v **and** showstatus **commands.**

```
XSCF> showlogs error -v
XSCF> showstatus
```

    If you encounter any hardware abnormality of the XSCF, contact service engineer.

15. **Confirm and update the imported XCP image again.**

```
XSCF> flashupdate -c update -m xcp -s 1050
```

Specify the XCP version to be updated. In this example, it is 1050. XSCFU#1 will be updated, and then XSCFU#0 updated, again.

When the firmware update for XSCFU#0 is complete, XSCFU#1 is active.

16. **Log in to XSCFU#1 using a serial connection or LAN connection.**

17. **Confirm completion of the update by using the** `showlogs event` **command.**

```
XSCF> showlogs event
```

    Confirm no abnormality is found during the update.

18. **Confirm that both the current and reserve banks of XSCFU#0 display the updated XCP versions**.

```
XSCF> version -c xcp

XSCF#1 (Active )
XCP0 (Reserve): 1050
XCP1 (Current): 1050
XSCF#0 (Standby)
XCP0 (Reserve): 1050
XCP1 (Current): 1050
```

    If the Current and Reserve banks on XSCF#0 do not indicate XCP revision 1050, contact service engineer.

19. **Confirm switching over between XSCFs works properly.**

```
XSCF> switchscf -t Standby
The XSCF unit switch between the Active and Standby states.
Continue? [y|n] :y
```

   a. **When the READY LED on XSCFU_B#1 remains lit, log in to XSCFU#0 using a serial connection or LAN connection.**

   b. **Confirm switching over between XSCFs using the following commands:**

```
XSCF> showhardconf
```

   Confirm XSCFU#1 is now the standby, and that XSCFU#0 has become the active.

```
XSCF> showlogs error
```

   Confirm no new errors have been recorded since the check in Step 14.

```
XSCF> showlogs event
```

   Confirm a message "XSCFU entered active state from standby state".

```
XSCF> showstatus
```

   Confirm a message “No failures found in System Initialization”.

20. **Power on all domains.**

```
XSCF> poweron -a
```

21. **Log in to XSCFU#0 and confirm all domains start up properly.**

```
XSCF> showlogs power
```

22. **Check that there are no new errors.**

```
XSCF> showlogs error
```

- In case an abnormality is encountered, take appropriate maintenance action and contact service engineer.
- If no abnormality is found, proceed to Step 23.

23. Turn the key switch on the operator panel from Service to Lock.

Abbreviations

A

ACS AC Section

ACSTPH ACS Three-Phase

B

BP Backplane

BUI Browser User Interface

C

CMB CPU Memory Board

CMU CPU/Memory Board Unit

CLI Command-Line Interface

CLKU Clock Control Unit

CPUM CPU Module

D

DAT Digital Audio Tape

DDC DC to DC Converter

DPF Dual Power Feed

DR Dynamic Reconfiguration

E

EMI Electromagnetic Interference

F

FAN FAN Unit

FRU Field-Replaceable Unit

H

HDD Hard Disk Drive

I

IOB I/O Board

IOU I/O Unit

IOUA IOU Onboard Device Card_A

M

MAC Memory Access Controller

MEDBP Media Backplane

O

OBP OpenBoot PROM

OPNL Operator Panel

P

PCICS	PCI Cassette
PCI-ES	PCI-Express Short
PFC	Power Factor Correction
PHP	PCI Hot Plug
POST	Power-On Self-Test
PSU	Power Supply Unit

R

RCI	Remote Cabinet Interface
RDPF	Rack-mountable Dual Power Feed

S

SAS	Serial Attached SCSI
SATA	Serial ATA (Advanced Technology Attachment)
SC	System Controller
SNSU	Sensor Unit
SWBP	Switch Backplane

T

TAPEU	Tape Drive Unit

U

UPS	Uninterruptible Power Supply

X

XBU	Crossbar Unit
XSCF	eXtended System Control Facility
XSCFU	eXtended System Control Facility Unit

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